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ENTERPRISE COMPUTING

Securing Y2K supply chain



IT managers at manufacturing companies may have their houses in order come year 2000, but they need to look outside as well. Year-2000 bugs will likely exist along points of the supply chain—in systems beyond a manufacturer's control. Ironically, highly automated manufacturers and those with just-in-time inventory systems face the most risk.

See article by Blaise Zerega, page 59

Bob Metcalfe says Y2K is not on the 1999 agenda, page 85.

Networking on Java

■ Sun, ObjectSpace make Jini plans

By Michael Vizard
and Emily Fitzloff

THE NEXT GENERATION of Java-based distributed computing architectures is starting to take shape thanks in part to the efforts of Sun Microsystems and a little-known company called ObjectSpace.

As a network-aware programming language, Java has the poten-

tial to fundamentally change how IT shops think about building networks and the applications that run on them. But right now, no network operating system infrastructure really leverages Java's full potential.

In an effort to change that, both Sun and ObjectSpace are readying implementations of a Java comput-

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Power play: Sybase advances a strong suite with PowerBuilder 6.5 and PowerJ 2.5. 83

Sybase toolset

PowerBuilder 6.5 boasts beefed-up support for Web apps, CORBA, and COM.

PowerJ 2.5 offers support for Java Foundation Classes and multiple JVMs.

advances a strong suite with PowerBuilder 6.5 and PowerJ 2.5. 83



Protocol evolution: The Test Center probes IPv6 in the debut of Tech Spotlight. 61

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Scope of Y2K crisis widens

Costs are mounting Clock problem found

By Ephraim Schwartz and Eric Hammond
ALTHOUGH MICROSOFT REFUSES TO comment beyond the mantra that its Office products are year-2000 compliant, IT managers and industry analysts are crying foul as costs continue to mount.

According to the Giga Information Group, the costs related to fixing the year-2000 problem are estimated at \$100 billion.

► MICROSOFT page 20



By Blaise Zerega and Eric Hammond
IT MANAGERS TESTING their Windows NT 4.0 systems for year-2000 compliance have yet another potential stumbling block to overcome: the PC's real-time clock (RTC). Some Windows NT 4.0 applications, particularly those in time-sensitive usage such as manufacturing and financial systems, are at risk.

► RTC page 20

BackOrifice

Breach raises questions over security ethics

By Matthew Nelson

JAVA, DESPITE ITS security features, is being used more and more to create potentially damaging hacks, and in at least one case is leading some observers to wonder if the security vendor community should have its own version of the Hippocratic oath.

WithinReach Software, in Haifa, Israel, has re-released BackOrifice as a Java applet.

By posting it to the WithinReach Web site as a demonstration applet, the group intended to show the dangerous nature of rogue Java applets. It took only "5 minutes" to reverse-engineer it, according to Assaf Arkin, who helped to create the site.

"It is not supposed to attack you, not to do anything that is irreversible. It's a demonstration," Arkin said.

However, Arkin is also a customer support manager at Security7 Software, a Java and ActiveX security scanning company based in Haifa, Israel, and Boston. Although Security7 provides the products

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ENTERPRISE COMPUTING

CEO David Duffield sits down with InfoWorld to discuss his ERP strategies

Piloting PeopleSoft

IN JUST 11 years, Dave Duffield, CEO of PeopleSoft, has taken the company from a narrowly focused human resource application vendor to the world's second largest application software vendor. Chasing megaprojects, power SAP and keeping ahead of the fiercely competitive Oracle, Duffield has his hands full. He sat down with InfoWorld Executive News Editor Mike Vizard and News Editor Katherine Bull to talk about what's ahead for PeopleSoft.

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*Estimated reseller price to end users for Netfinity 5500 model 8600-1111 (tower), and Netfinity 7000 model 8601-RMO (rack) and -TMO (tower). Certain features described on the right are available for an additional charge. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. Based on published TPC-C results of 11,078 spcs. as of 4/9/98. TPC and TPC-C are registered trademarks of Transaction Processing Performance Council. IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. Intel Inside and Pentium are registered trademarks of Intel Corporation. ©1998 IBM Corp. All rights reserved.



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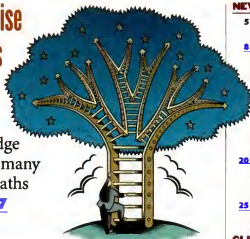
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Uniting the Web
and the Enterprise

Enterprise Careers

The tree of knowledge leads to many career paths
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OLAP plus Java equals a new way to look at data
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Suspiciously similar spam looks like a pyramid scheme
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FLASHBACK
1981

20 YEARS

IBM's PC and the space shuttle debuted. And there was Bill Gates? Predicting the future in *Info World*.

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► The Gorilla Game: An Investor's Guide to Picking Winners in High Technology, by Geoffrey A. Moore, Paul Johnson, and Tom Kippola

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XML support moves forward

By Jeff Walsh

XML MADE STRIDES this week with news from Microsoft, DataChannel, Inso, and the World Wide Web Consortium (W3C).

Microsoft and DataChannel announced a new Java-based Extensible Markup Language (XML) parser co-developed by the companies. The parser, which is 100 percent Java, runs on the server to avoid slower, client virtual machines. It can be combined with DataChannel's Rio product to enable Java programmers to concentrate on their programming, and not business logic. The parser will be available from both companies' Web sites later this month.

Some analysts see the partnership was a way for Microsoft to develop Java but not deal with it directly.

"I can't see where Microsoft wouldn't want to own the parser unless they're planning to do the C++ version and push the Java version out of DataChannel's camp," said JP Morgenthal, president of NC Focus, in Hewlett, N.Y. This is a way for Microsoft to distance themselves from Java."

Separately, the W3C upgraded both the Extensible Style Language (XSL) and the Document Object Model (DOM) last week, bumping them up to specification and pro-



INSO DYNABASE 3.0 has a familiar Explorer interface to manage Web site databases.

posed recommendation, respectively. Both are XML-based standards for building dynamic Web applications.

XSL serves as a bridging technology between a XML data and whatever format in which information will be published, such as Web, print, or multimedia. The DOM is a component object model that provides an interface for programs and scripts to update the content, structure, and format of documents.

Morgenthal said many vendors are waiting for the DOM to be completed because their products will be based on the final specification, whereas XSL was less critical.

Inso this week will deliver the promise of XML-based Web content management and publishing with the release of DynaBase 3.0.

DynaBase 3.0 features automatic Web conversion of files and a Java command line interface that enables DynaBase to exchange data with other systems. A separate Java client enables users on any platform to work with the DynaBase file system.

Ron Lee, Webmaster for A.H. Belo's Dallas Morning News in Dallas, is using DynaBase to serve a special baseball section of the newspaper. He plans to use DynaBase to publish the entire newspaper in October.

"It's very powerful. I'm getting the ability to use and search my own tags," Lee said. "It has a very Explorer-like interface to DynaBase and the scripting follows VB [Visual Basic] Script closely."

DynaBase 3.0 plugs into Microsoft's Internet Information Server and Netscape's Enterprise Server running Windows NT 4.0 and Sun Solaris 2.6. DynaBase is rising starts at \$47,000.

Microsoft Corp., in Redmond, Wash., is at <http://www.microsoft.com.DataChannel>, in Bellevue, Wash., is at <http://www.datachannel.com>. Inso Corp., in Boston, is at <http://www.inso.com>.

Distributed application deployment

Vendors ready next wave of application servers

By Michael Vizard and Dana Gardner

CORPORATE IT managers' application server options broadened last week with the delivery of Bluestone's Enterprise JavaBeans (EJB) server, details on Progress Software's plans, and news that GemStone's next server will better tap databases.

Progress Software will release *Appletivity 3.0* at the Internet World Fall show in New York, in October.

New features in the application server, acquired by Progress last year, include a smart-client auto-sensing capability that recognizes Java, HTML, Dynamic HTML, and Extensible Markup Language (XML) clients and support for EJB to access back-end data sources.

In addition, the company plans to make use of its auto-sensing technology to help automate the process of accessing back-end data, said Dennis Moore, vice president of marketing at Progress. Finally, it will also include an improved de-



PROGRESS SOFTWARE'S Appletivity 3.0 will include smart-client auto-sensing.

velopment environment that supports wizards, Java debuggers, reuse of components, and integration with source code control systems.

Working to be among the first EJB servers, Bluestone last week delivered its *Sapphire* Web EJB server with support for XML, Java transaction services, Java-based naming and directory services, and a proxy-based, load-balance broker for higher scaling.

"XML will be critically important for application servers because for the first time we have a language for linking middleware applications," said John Capobianco, senior vice president of marketing at Bluestone.

Available on Windows 95, Windows NT, Sun Solaris, IBM AIX, HP-UX, SGI Irix, and Digital Alpha Unix, *Sapphire* costs \$25,000 including the server, the application manager, and five developer seats.

GemStone will this week announce that the next version of its *GemStone* application server will use *Intersolv's* DataDirect Sequel-Link Java Database Connectivity (JDBC) technology to tap more than 100 database and platform configurations.

The application server rollouts come amid this week's arrival of Oracle's *Application Server 4.0*, which supports EJB, CORBA, ODBC, and JDBC standards. It will be accompanied by an integrated suite of *Designer 2.1* and *Developer 1.0* tools. Oracle's server will also support the *Lightweight Directory Access Protocol* and include integrated *Object Transaction Server* and Java transaction services.

Bluestone Software Inc., in Mount Laurel, N.J., is at <http://www.bluestone.com>. Progress Software Inc., in Newark, Calif., is at <http://www.progress.com>. GemStone System Inc., in Beaverton, Ore., is at <http://www.gemstone.com>. Oracle Corp., in Redwood Shores, Calif., is at <http://www.oracle.com>.

Netscape sales get a boost from Netcenter

By Jon Corretto

NETSCAPE COULD be looking to spin off its enterprise software division from its Netcenter Web site business, and some industry observers said recent moves could be early indications that the company is looking to attract a buyer for its software operations.

Netscape last week announced better-than-expected third quarter sales, due in a large part to a 24 percent increase in revenue from advertising and partnerships for Netcenter. Netscape posted revenues of more than \$150 million for the quarter that ended on July 31, which is up 18 percent vs. the previous quarter. Revenues from Netscape's software division were also up 16 percent from last quarter.

However, it is not so much the numbers themselves, but the way they were presented that may reveal the most about the company's strategy. For the first time, Netscape delivered separate performance reports for Netcenter and its software division — a move that according to analysts could be the

New cash cow

During the past six months, revenue from Netscape's Netcenter site has grown by more than 80 percent — as compared to 22 percent increase in its enterprise software division.

Revenues in millions	Enterprise software	Netcenter
First quarter	\$91.4	\$21.3
Second quarter	\$96.1	\$31.1
Third quarter	\$111.6	\$38.7

SOURCE: NETSCAPE COMMUNICATIONS CORP.

first step toward spinning off the segments. A split would allow investors to invest in one division without investing in the other.

"Why else would the company explicitly break out performance by division unless it wanted to show the investment world how well each division far exceeded the other?" said Ron Rappaport, an industry analyst at Zona Research, in Redwood City, Calif. "Internally, the company is really rallying its troops under the Netcenter banner."

Ever since Netscape decided to give away its Web browsers for free it has been struggling to find a new revenue stream. The company had

hoped to sell into big corporations with its server software. That strategy continued with the acquisition of application server-maker Kiva. But even with some new high-profile customers, that segment's revenues have been relatively flat. In the past six months, the software business has grown by 22 percent, compared to an 82 percent growth in Netcenter's revenue.

The enterprise software business' focus is on giant corporate customers — such as Ford Motors and John Hancock — which paid off with double-digit percentage growth in revenue for that division. But big customers are unlikely to

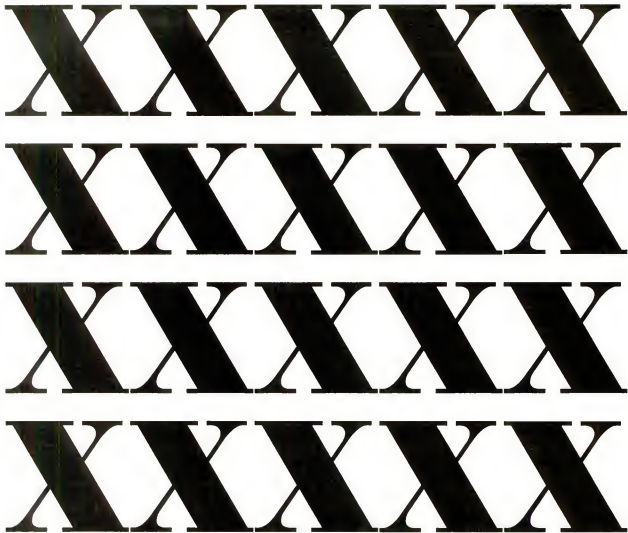
provide a reliable stream, analysts said, because they have long sales cycles. Also, the specter of the "free" Internet and Internet-commerce software bundled with Microsoft's upcoming Windows NT 5.0 threatens to repeat what Microsoft's browser-bundling had to Navigator's market share.

So some observers said they believe that Netscape's hopes rest on Netcenter. According to analysts, it would be a wise move to cash in on the company's brand name, proping up the Netcenter business on the very thing that made the company successful in the first place.

"Netscape was once perceived to be the Internet brand," a Zona report stated. "We believe that Netscape has rediscovered its future in its past ... and Netcenter may hold the key to its black ink resurrection."

Netscape sees the divisions as separate businesses with separate business models, said Quincy Smith, director of investor relations at Netscape. But he said it was naive to read any more into the report.

Netscape Communications Corp., in Mountain View, Calif., can be reached at <http://www.netscape.com>.



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Intel systems ready for NT 5.0

■ Dell, HP, IBM, Toshiba lead list of OEMs to unveil boxes

By Ephraim Schwartz

SYSTEM VENDORS will detail ever more powerful desktop systems based on Intel's introduction of the 450-MHz Pentium II processor this week in the expectation that before the end of the current desktop life cycle, the new systems will be needed to run Microsoft's Windows NT 5.0 operating system.

Also announced by both Intel and system OEMs are new desktops based on the introduction of Intel's 300-MHz Celeron processor with 128KB cache and its 333-MHz Celeron with 128KB cache.

Among the vendors announcing products are Dell, Hewlett-Packard, IBM, Toshiba, Microm, Gateway, and others. However, Compaq said it will

Pentium II delivers more juice for high-speed desktop systems

Intel's Celeron processor also takes a prominent spot in the latest round of models from OEMs.

Make	Model	Chip speed	Hard drive	RAM	Price
Dell Computer	PowerEdge 2300	450 MHz	4.3GB	64MB	\$2,918
	OptiPlex GX1P	450 MHz	14.4GB	128MB	\$3,377*
	OptiPlex E1	333 MHz**	2.1GB	32MB	\$1,326
Hewlett-Packard	VectraVL	450 MHz	6.4GB	64MB	\$2,300
	VectraVL	333 MHz**	3.2GB	32MB	\$1,200
	Pro 8000	450 MHz	8GB	64MB	\$2,100
IBM	PC 300PL	450 MHz	6.4GB	64MB	\$2,099
	PC 300GL	450 MHz	6.4GB	64MB	\$1,925
	PC 300GL	333 MHz**	3.2GB	32MB	\$1,045
Toshiba	Equium 7000S	300 MHz	3GB	32MB	\$1,999
	Equium 7000S	333 MHz	3GB	32MB	\$2,040
	Equium 7100S	450 MHz	3GB	32MB	\$2,249

*Includes monitor

**Intel Celeron processor with 128KB cache

hold back.

"We had a lot of customer feedback last April when Intel announced the 350-MHz and 400-MHz Pentium II and companies

weren't able to ship immediately," said Michael Takemura, product manager at Compaq, in Houston.

Rather than the rise of IT managers this time around, Take-

mura said the company has a 450-MHz Pentium II road map in place, but it will refrain from announcing part numbers and prices for a "couple of weeks" so boxes can ship on the same day as an announcement.

The 450-MHz systems will provide IT support for future technology, such as compression, encryption, decryption, speech recognition, push and pull technology—all of which is not readily handled even by 350-MHz and 400-MHz systems, according to Takemura.

"IS managers need more headroom," Takemura said.

Dell Computer will announce new high-end OptiPlex models that will leverage the faster processor with larger and faster components.

Systems will start with a base of 128MB of Synchronous DRAM, EIDE hard drives with speeds ranging from 7200 rpm to 10,000 rpm, SCSI with 18GB capacity, a mini-

imum of 8MB of video memory, and a 17- to 40-variable speed CD-ROM drive.

"This system is geared for people who want to have [maximum] performance on their desktop when the time comes [for NT 5.0]," said Ken Bissell, a Dell product manager in Round Rock, Texas. "It is the best investment protection in terms of running future OSes."

One industry analyst agreed. "Do you need all that performance right at the moment? Maybe not. But this thing has to last three years," said Martin Reynolds, an analyst at Dataquest, in San Jose, Calif.

Although IT managers may be buying now for future performance, they also appear to be more selective, according to one analyst.

"There seems to be a lot more understanding [that] you don't have to get the highest end of the way through the organization, and so IS managers are developing a more diverse strategy," said Erin Lawrence, an industry analyst at Dataquest.

Intel Corp., in Santa Clara, Calif., is at <http://www.intel.com>.

Operating systems

Microsoft moves closer to NT 5.0

By Bob Trutt

IN ITS QUEST to bring Windows NT up to Unix enterprise standards, Microsoft is addressing high-end features such as Active Directory, as well as fixing desktop-oriented problems that cause reboots and system crashes.

In designing NT 5.0, Microsoft engineers have eliminated 45 configuration reboot scenarios, including dynamic volume management, network protocol configuration, and plug-and-play hardware settings. Similarly, NT 5.0 will cut the number of "blue screen" crashes and memory leaks, according to Moshe Dunie, a vice president at Microsoft.

Still, NT 5.0 Beta 2, shows that Microsoft is far from finished with NT 5.0.

Among the shortcomings in the release, which Dunie said "focuses on depth rather than breadth," are lack of third-party driver support; only alpha-level code for Windows Terminal Server; minimal Windows 9x-to-NT 5.0 upgrade support; and limited Advanced Configuration and Power Interface systems support.

Also, the added complexity and increased code has made the system slower to boot than NT 4.0. Dunie said the boot speed would be

equal to that of NT 4.0 when NT 5.0 ships.

Another feature in the second beta version is Microsoft Installer, a system service designed to track a PC client registry and manage DLL dependencies. Microsoft is including technology from Seagate Software's Wininstall product that will make the installer backward-compatible.

"Microsoft devised this architecture to take logic out of the vendor's hand and let the OS make installation decisions on about what to overwrite and [what] not [to] overwrite," said Mel Raffi, vice president of Wininstall research and development at Seagate.

"As wonderful as this technology is, when it first hits the market with NT 5.0 there will be a limited number of people shipping Microsoft Installer with their products. If people want to use this, there's going to be a lag time, and we were brought into the picture to solve that," Raffi said.

Jim Allchin, senior vice president of Microsoft's personal and business systems group, acknowledged last week at a technical workshop that total cost of ownership was not high on Microsoft's NT priority list—until the software giant heard

Third time's a charm

The third beta version of Windows NT 5.0, which Microsoft will issue before the product ships, will include new and improved features.

- Hot-docking support
- Enhanced ease-of-use functionality
- Simplified server setup
- Fixes for problems found in Beta 2

from customers.

Microsoft bundled the first iteration of Component Object Model (COM+), the update to its COM, with NT 5.0, Beta 2.

The final ship date of NT 5.0 is cloudy, and Microsoft recently added a third beta phase, which will be public.

Intense development of the second beta version meant that all available NT developers, as well as most of those who worked on Windows 98, have been focused on NT 5.0. As a result, Service Pack 4 for NT 4.0, now expected in 30 to 60 days, is late.

"We feel really bad about that," Dunie said, adding that Microsoft will appoint a dedicated Service Pack team.

Allchin highlighted Microsoft's work to create an embedded version of NT, and said boosting real-time audio and video capabilities will be a focus for the product's development going forward.

Microsoft Corp., in Redmond, Wash., can be reached at <http://www.microsoft.com>. Seagate Software Inc., in Scotts Valley, Calif., can be reached at (800) 327-2232.

Microsoft has a week of mixed fortunes on the legal front

By Ted Smalley Bowen, Bob Trutt and Nancy Weil

IT WAS A CASE of good news/bad news on the legal front for Microsoft last week: The company won a couple of rounds in its antitrust battle with the U.S. Department of Justice, but faced an antitrust lawsuit from tools vendor Bristol Technology, which alleges Microsoft is using its operating system monopoly to undermine the Unix market and sink Bristol.

On the Justice Department front, a U.S. Court of Appeals closed the depositions of Microsoft Chairman and CEO Bill Gates and other officials to the public, overruling a judgment by U.S. District Judge Thomas Penfield Jackson. Jackson had ruled in favor of several news organizations that, citing the Sherman Antitrust Act, sought to open pretrial interviews. Gates is scheduled to be deposed in Seattle this week.

Jackson also delayed the trial two weeks, moving it back to Sept. 23. The lawsuit filed by Bristol in the U.S. District Court in Bridgeport, Conn., seeks unspecified monetary damages, and contends that Microsoft has failed to negotiate an acceptable Windows Interface Source Environment (WISE) licensing agreement in good faith. It asks the court to order Microsoft to provide

unrestricted and up-to-date source code for the Windows family.

Microsoft officials said the terms offered to Bristol were acceptable.

Sybase CEO Mitchell Kertzman submitted an affidavit saying Sybase relies on Bristol's capability to provide the entire Windows programming interface.

Microsoft wants to increase royalties paid per application shipped by 400 percent, said Keith Blackwell, Bristol president and chairman.

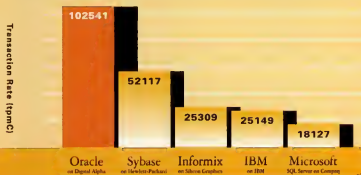
Bristol's chief competitor, tools vendor Softway, which Bristol alleges is colluding with Microsoft, is close to renewing its WISE license, said its director of business development Bill McCarthy. He added that Mainsoft's royalty increase would be less than 100 percent, and said the reduced amount of source code available would not compromise the effectiveness of Mainsoft's tools.

Officials at Microsoft and Mainsoft denied the charges of collusion. Microsoft Corp., in Redmond, Wash., is at <http://www.microsoft.com>. Bristol Technology Inc., in Danbury, Conn., is at <http://www.bristol.com>.

Nancy Weil is a Boston correspondent for the IDG News Service, an InfoWorld affiliate.

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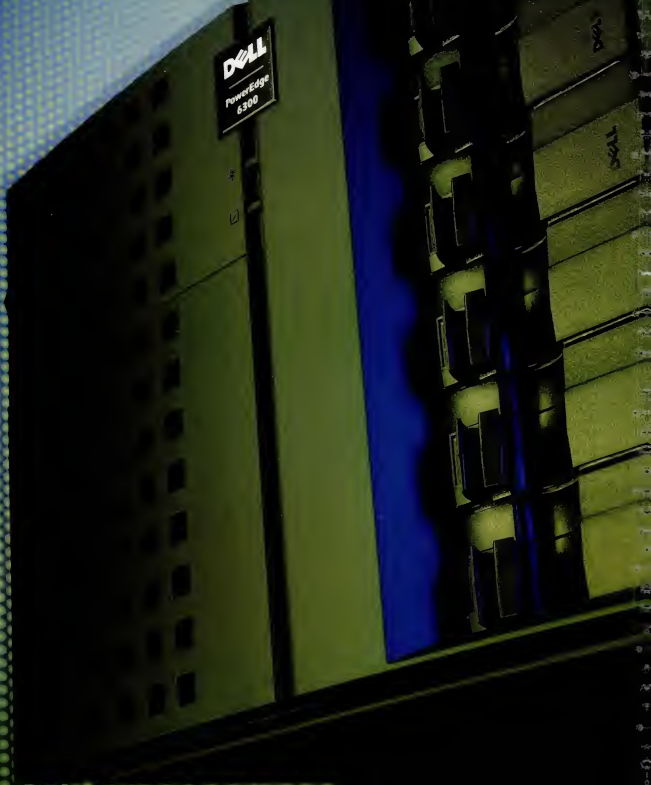
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SCO touts UnixWare at forum

By Emily Fitzloff and James Nicolai

SCO AT ITS SCO Forum conference last week added Oracle as a database for the SCO UnixWare 7 operating system and introduced a new version of SCO's OpenServer OS.

IBM and Compaq partnerships also were

detailed, and SCO touted its Linux support.

Unveiled at the Santa Cruz, Calif., event were Oracle Applications and the Oracle8 RDBMS for UnixWare 7, as well OpenServer 5.0.5 for small to midsize businesses. Release 5.0.5 features streaming media technology

from RealNetworks, a Dynamic Host Configuration Protocol (DHCP) server for remote network access from mobile systems, IMAP4 support, new Netscape client software, and enhanced versions of SCO's Windows-to-Unix software.

But the focus of last week's SCO Forum was UnixWare 7. The OS could prove a lower-cost alternative to RISC-based systems running Sun Solaris, HP-UX, or IBM's AIX, according

to Jean Bozman, an analyst at International Data Corp. in Framingham, Mass.

"RISC systems have historically been 30 to 40 percent more expensive than Intel-based systems" to buy and maintain, Bozman said. To help position itself as a player in big business, SCO and Compaq last week launched a program that will bring six-node clustering capabilities to UnixWare 7-based Compaq servers.

But David Gloria, systems integrator and vice president of Computer Integrators, in Richardson, Texas, said UnixWare 7 is a solid product that needs refinements such as more device drivers before it is ready for the enterprise.

Also last week, SCO and IBM extended a recent agreement that promotes IBM's support of its Network Station Manager for SCO operating systems.

The growing freeware versions of Unix, such as Linux, help UnixWare, according to an SCO executive. Linux has gained notoriety lately.

"The Linux movement is a Unix movement, and we're glad to see it," said SCO President Doug Michels.

SCO is in the process of adding Linux binary compatibility to UnixWare 7, allowing users to run Linux software on SCO servers "right out of the box," Michels said.

SCO, based in Santa Cruz, can be reached at <http://www.sco.com>.

James Nicolai is a San Francisco correspondent for the *ITG* news service, an InfoWorld affiliate.

PeerLogic brings ICL ORB to the U.S.

ICL LAST WEEK licensed its object request broker (ORB) to PeerLogic, bringing yet another object transaction environment to the U.S. middleware market.

In an all-cash deal for an undisclosed sum, privately held PeerLogic will be sole developer and licensor of ICL's DAIS CORBA-compliant ORB — although ICL will continue to support its existing customers and resell the technology.

ICL's DAIS is considered among the more robust ORBs available, and among the very few that contain CORBA 2.0-level security and fault tolerance, industry analysts said.

"We now have four independent software vendors selling mission-critical CORBA infrastructure systems: Inprise, Iona, BEA, and PeerLogic," said Anne Thomas, senior consultant at the Patricia Seybold Group, in Boston. "This lets PeerLogic leapfrog from a peer-to-peer, low-level messaging structure to a distributed objects infrastructure."

PeerLogic, hitherto a mission-critical middleware messaging layer vendor, is acquiring DAIS as part of a strategic initiative to expand further into the middleware arena.

ICL Plc., in London, is at <http://www.icl.com>. PeerLogic Inc., in San Francisco, is at <http://www.peerlogic.com>.

— Dana Gardner

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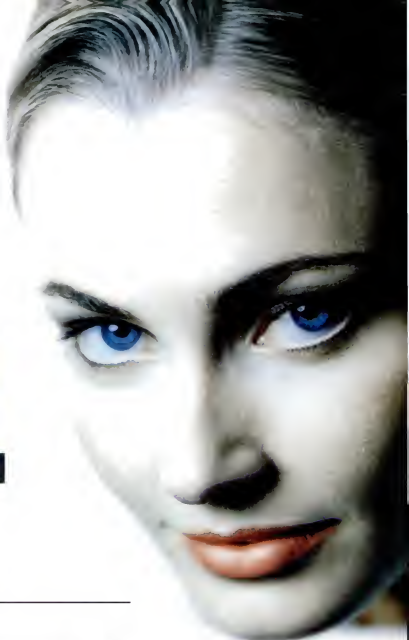


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FOCUS: YEAR-2000 ISSUES

Microsoft

Continued from page 1

lem can be high. Some third-party tools can cost as much as \$2,000 per seat. The cost in people hours is also high because fixing the problem cannot easily be automated.

"Fixing [Microsoft's] Word means taking 3 or 4 minutes to install the patch. Then you have to turn off the system and reboot. Then you have to go to Excel and Access. A user might spend an hour doing this. If I have 10,000 computers, I have spent [10,000 [people hours], and that's six person years," said Marc Perl, year-2000 project manager at Visa USA, in San Mateo, Calif., and a member of InfoWorld's Corporate Advisory Board.

In general, industry observers said Microsoft does not appear to be doing enough to help the problem, although the company has hard-coded available a number of tools on its Web site to help resolve some issues.

"Microsoft is in a position to help end-users make it through. They are instead creating a lot of confusion," said Stephanie Moore, an analyst at Giga, in Westport, Conn.

The confusion about year-2000-compliant Microsoft Office products centers on two issues: the suite's version changes to the so-called "pivot dates" that determine in what century to place the month and year within the desktop applications, and the use of customized macros especially in programs such as Excel. (See "Microsoft not Y2K-ready," July 6, page 1.)

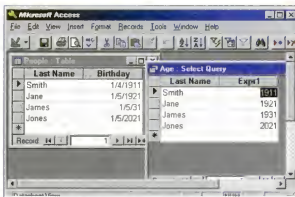
Macros have no way of interpreting the dates and cannot use the 100-year window that Excel uses. These macros, usually created in spreadsheets by nonprogrammers, have proliferated throughout the enterprise and are one of the chief ways in which a spreadsheet is used.

In testing conducted by the InfoWorld Test Center, analysts demonstrated the scope of these date issues in Excel and Access.

Microsoft said Excel and Access are year-2000 compliant to the extent that they can process four-digit dates, including dates that occur after Jan. 1, 2000.

However, some date cells containing two-digit years in Excel spreadsheets will behave differently when new two-digit years are added to the spreadsheet after Microsoft Office is upgraded from Office 95 to Office 97 or when an Office 95 user transfers a spreadsheet to an Office 97 user.

Year-2000 compliance does not



DATES ENTERED AS TWO-DIGIT YEARS IN EXCEL FOR OFFICE 97 pivot on a different year than in Office 95. This may not be apparent when date information is entered into a field formatted with two-digit years.

necessarily mean date-friendly. Microsoft has placed its customers in an awkward situation; date-related data must be carefully examined to ensure that it is producing the desired results.

"We're fixing the problem by hard coding four-digit date field," said Randy Hartwig, a senior developer at Stockamp & Associates,

in Lake Oswego, Ore.

Microsoft last week said that given the scope of the problems, it is coping as well as any vendor.

Microsoft Corp., in Redmond, Wash., can be reached at <http://www.microsoft.com>.

Jill Welch contributed to this article.

RTC

Continued from page 1

directly access PCs' RTCs, many of which are not year-2000 compliant.

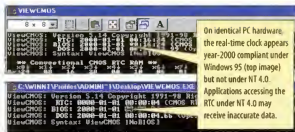
In independent analysis, the InfoWorld Test Center found at least one application that accessed the RTC on a PC running NT 4.0. Using Right Time's CMOSView, a system utility, InfoWorld analysts accessed the RTC and found that the year value being read by NT 4.0 was "0000." In a subsequent test, Windows 95 read the same RTC on the same hardware as "2000."

This difference further confuses the testing that IT directors will have to perform and contradicts statements from Microsoft regarding access to the RTC.

"Consistent with programming best practices of not exposing any applications to the real-time clock directly, Windows [NT] 4.0 prohibits applications from directly accessing the real-time clock," according to Microsoft's Web site.

The problem could be severe because most RTCs are not compliant with year-2000 dates; they have only two digits in the year field instead of four digits.

Analysts said it is too soon to estimate how many applications will be affected.



"Many applications go directly to the RTC. The question is, do they have something in place to translate the date and time?" said Karen Moser, director of application development tools at the Aberdeen Group, a consultancy in Boston.

Applications that rely on precise time information — financial, engineering, and manufacturing — are frequently written to bypass time information from the operating system and to pull time information from the RTC. This practice ensures accurate information and can improve application performance.

Stuart Greenfield, a systems analyst for the State of Texas in Austin, said he is concerned about RTC access because Texas is building a Web-based tax filing application to run on NT 4.0. A key feature of the tax application will be date-stamping the returns.

Some PC hardware manufacturers have put their users on notice as to the potential for year-2000 prob-

Financial incentives

IRS offers write-offs for Y2K expenditures

By Blaise Zerga

A LITTLE-KNOWN Internal Revenue Service procedure may send a sigh of relief through those members of the IT community looking for ways to maximize expenditures on year-2000 projects.

Effective for 1998 filings, companies will be able to write off some costs for repairing computer systems due to year-2000 problems, according to IRS Revenue Procedure 97-50. The procedure was issued by the IRS in 1997 to help companies clarify accounting procedures for the problem.

According to the IRS, companies

will be permitted to write off for tax purposes software development costs associated with year-2000 projects; if they previously capitalized and amortized such costs, they should do so again. But companies purchasing software to gain compliance can only claim an expense.

"The distinguishing factor is whether you're making your software compliant or whether you're purchasing software," said Ken Hubanek, a representative for the IRS, in Washington.

Some attorneys said this distinction is fuzzy for companies seeking to use year-2000 projects as a way not only to gain compliance, but also a way to improve systems. For example, a company replacing legacy systems with SAP R/3 enterprise resource planning software will have to be careful about whether to treat the project as a capitalized or deductible expense.

"If you've got an existing asset, repairs are deductible, but improvements are capitalized," said Brian Wainwright, an attorney at Pillsbury Madison & Sutro, in Palo Alto, Calif.

Small companies will have the ability to write off expenses either way — as a repair or an improvement — if a bill introduced in June, H.R. 314, becomes law.

In general, companies would rather treat their year-2000 costs as an expense to get a full deduction.

"Coors would be extremely interested in being able to capitalize their year-2000 costs," said Byron Ferguson, a developer at Coors Brewing, in Golden, Colo.

However, some IT directors questioned the idea of providing tax relief for year-2000 expenses.

"I think it makes good sense to capitalize investments that have future value, and fixes for year-2000 system problems really are short-term tactical expenses," said Jeff Winston, vice president of IS technology and operations at Allergan, in Irvine, Calif. "It's a cost of doing business as opposed to an investment that has a future lifetime."

Lynda Radosevich contributed to this article.

Ephraim Schwartz contributed to this article.

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Windows NT Server 4.0 delivers proven file/print performance. Using the industry-standard Netbench performance tool, Windows NT Server 4.0 outperforms Novell NetWare 4.11 by nearly 17% in file/print throughput tests.

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So the question is not: How can I minimize the inconvenience of having to upgrade my file/print? The question is: How can I maximize the benefit of doing so? It seems that Y2K is about more than just surviving the turn of the millennium. Windows NT Server proves that it's equally about making the most of what's left of the 1900s, and getting the 2000s off to a flying start.

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PC hardware

Micron to pump up PCs with new chip set

By Andy Santoni

MICRON ELECTRONICS this year will ship desktop systems with a Micron-developed core logic chip set for higher speed, and a 3-pound notebook priced at less than \$1,500, according to company officials.

Following the 450-MHz Pentium II desktops Micron will offer this year when Intel introduces the CPU, the company will boost performance by using a new version of the Samurai chip set it has been using in Paradigm workstations, said Jeff Moeser, Micron vice president for desktop products.

The Samurai SL chip set will appear first in high-end Millennia desktops, then in mainstream ClientPro systems, Moeser said. The chip set implements 64-bit, 66-MHz PCI buses to increase bandwidth compared to the 32-bit, 33-MHz PCI bus in most PCs.

Moreover, the new Samurai SL chip set will support synchronous link DRAM (SLDRAM) to speed memory operations, Moeser said. SLDRAM, along with Double Data Rate and Enhanced DRAM, is an alternative to the Direct Rambus DRAM Intel will support in 1999.

One advantage of SLDRAM is that it can address very large memory arrays, which allows Micron to use the technology in workstations, servers, and desktops.

Micron Technologies, the chip-making parent of Micron Electronics, will make the SLDRAM parts. In these systems, Micron Electronics also may implement the Socket X graphics-chip interface that is under development by the two companies and graphics-chip supplier Rendition.

"This is the potential launch point for Socket X," Moeser said.

Socket X increases graphics performance by incorporating graphics memory on the accelerator chip, Moeser explained. It also gives system builders flexibility in choosing a graphics-chip supplier because they would all use the same style socket.

This runs counter to Intel's graphics-chip plans, which call for adding graphics capabilities to the core logic. Intel in 1999 will implement this architecture in its Whitney chip set.

The different architectures target different applications, Moeser said. Although the Whitney will find its

New Micron notebook specifications

Name:	To be determined
CPU:	233 MHz or 266 MHz
RAM:	32MB
Video RAM:	2MB
Screen:	10.4-inch thin-film transistor
Hard drive:	As much as 4GB
PC card slots:	Two
Price:	Less than \$1,500

SOURCE: MICRON ELECTRONICS INC.

way into low-cost systems, Socket X should be in mainstream systems from Micron and other system builders in 1999.

"We're not fighting Intel," Moeser said. "We think Socket X is a better way to do it."

So far, no other system OEM or graphics-chip supplier has committed to Socket X.

In notebooks, Micron this fall will introduce a thin, light, low-cost system with an Intel Pentium MMX CPU, according to Shane Thomas, Micron vice president of portable products.

In other plans, Thomas said Micron has been working with a vendor on a Windows CE handheld device. Today, the company offers Casio products and 3Com Pal computers through its Addition Program, he noted.

"Our second pass will be putting our name on someone else's product," Thomas said. Afterward, Micron may build its own Windows CE device.

Micron Electronics Inc., in Nampa, Idaho, can be reached at (800) 209-9686 or <http://www.micronpc.com>.

Java

Continued from page 1

that could protect against attacks such as the Java version of Back-Orifice, his contact with WithinReach is "my pastime," Arkin said.

"The only stuff I'm involved in is feedback [on] both sides," Arkin said.

Arkin's employers know about his activities and believe that letting the public know about the damage they can do.

"We think it's important that we,

By Matthew Nelson

CISCO SYSTEMS NEXT week will announce that it is entering into a bundling agreement with Finjan, a mobile-code scanning company. Under the agreement, Cisco's Pix firewalls will include a copy of Finjan's SurfinGate application to check mobile code entering a network.

Malicious mobile code consists of Java applets, ActiveX controls, JavaScript, and other auto-executables that can steal data, erase hard drives, or create denial-of-service

attacks without users' knowledge.

"We definitely have the feedback from our users that protection from the threat of mobile code is an increasing priority," said Kurt Kruger, manager of security product marketing for Cisco's Security Services Unit.

"As we are finding more and more content taking advantage of mobile-code capabilities, and as business use of the Internet increases, protecting against these threats is a priority," Kruger said.

Cisco will offer basic use of the SurfinGate system with the firewall; full use of the system will require a licensing agreement with Finjan. A date for the bundle to be created is yet to be determined.

"Bundling is saying this is something you need," said Ted Julian, an analyst at Forrester Research, in Cambridge, Mass. Cisco Systems Inc., in San Jose, Calif., is at <http://www.cisco.com>. Finjan Software Inc., also in San Jose, is at <http://www.finjan.com>.

Jini

Continued from page 1

ing model called Jini, which is in turn based on a Sun project called JavaSpaces.

Jini is designed to make Java computing pervasive by using distributed computing services, rather than specific applications and servers, said James Gosling, Sun vice president, during a keynote at the Software Development East show in Washington last week.

Jini uses JavaSpaces to allow users to execute multiple objects on multiple systems simultaneously across the network.

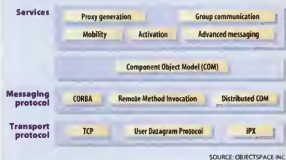
JavaSpaces is essentially a facility for communicating tasks out and bringing jobs back," Gosling said.

Gosling said IT shops should be able to build applications that use all the distributed-system horsepower on a network to run super-computer-class applications, and use JavaSpaces to manage them.

But Sun is not as far down this path as ObjectSpace, which has quietly amassed a customer base of 5,000 customers and counts Tivoli and Novell among its licensees for a Java-based distributed computing

ObjectSpace Voyager Pro 2.0 architecture

Voyager Pro 2.0, a 100 percent Java-based software development platform for distributed object computing, is receiving major industry support. Third-party vendors—including Tivoli, Novell, and Sun—are touting its capability to transform ordinary Java objects into intelligent, autonomous agents.



architecture called Voyager. Novell declined to comment, but Tivoli is expected to incorporate Voyager technology into a network-management offering later this year.

Voyager Professional Edition, unveiled at Software Development East, is a set of mobile agents and Remote Method Invocation routines built on an object request broker that complies with the Object Management Group's CORBA standard and Sun's Remote Method Invocation specification for Java.

According to CEO David Norris, ObjectSpace will release a complete

commercial implementation of Jini later this year that will let users of consumer electronic devices access Internet services to find other resources more easily. Sun is only expected to release a Jini reference implementation. Novell is among the companies intending to support Jini; sources said it is negotiating a deeper alliance with ObjectSpace.

Later this year, ObjectSpace will deliver add-on services targeted at transaction management and encryption, respectively (see chart).

ObjectSpace Inc., in Dallas, is at <http://www.objectspace.com>.

as security people, alert people to what it can do," said Jack Hem-brough, executive vice president of Security7. "I wouldn't say he's working both sides of the fence."

Some industry observers have questioned whether such creation of hostile code is commonplace with security vendors.

"In a loose sense, it's safe to say yes," said Ted Julian, an analyst at Forrester Research, in Cambridge, Mass. He acknowledged that hackers and those who protect against them often have ongoing dialogues.

However, such close contact and

postings of potentially harmful applications can harken back to the concerns some had that security vendors were creating the threats they protect against, Julian said.

"Everybody wonders what the roots of the anti-virus business are and what role the anti-virus vendors may have played in creating the problem they solve," Julian said. "[But] one could make a strong case why they need to [create harmful code. It is] part of their effort to push the boundaries of the anti-virus and malicious code technologies so they can be ready to solve

those problems when they emerge." But other mobile code scanning companies categorically deny allowing creation of harmful applets for any reason.

"We don't do that; we have enough to keep us busy," said Jerry Hyughe, global product manager at Safe, in San Jose, Calif.

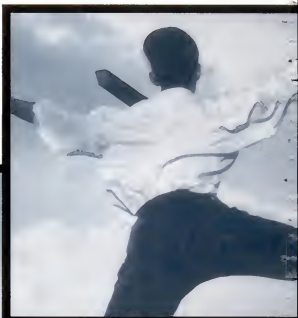
"We have a policy against proliferating applets that could do harm," agreed Penny Leavy, vice president of worldwide marketing at Sun, in San Jose, Calif.

WithinReach Software Ltd. is at <http://www.withinreach.co.il>. Security7 Software Inc. is at <http://www.security7.com>.



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ANNOUNCED

ORACLE in September will rename its forthcoming database Oracle8i. In an attempt to focus on the Internet functionality of the product, an Oracle representative said last week. Now known as Oracle8i, the database will offer Internet-friendly features, such as a Java virtual machine for executing Java applets in the database. The new RDBMS is due to ship late this year. Oracle Corp. (650) 506-7000.

CREATIVE LABS announced that its Sound Blaster Live, an audio accelerator, meets the demands of the Microsoft/Intel PC 99 specification by plugging into a PCI slot instead of an ISA slot. The \$200 system includes the sound card, software, a new Environmental Audio Extensions API, and Cambridge Soundworks' four-channel speaker system. A separate digital I/O card offers tools for content creation and playback. Creative Labs Inc. (408) 428-6600.

SHIPPING

IONA TECHNOLOGIES has delivered its OrbixTalk 1.2 middleware messaging solution on the IBM AIX platform. Built for guaranteed one-to-many or many-to-many communication between components and applications, OrbixTalk, which includes OrbixTalk MessageStore, already ships on Sun Solaris, HP-UX, and Microsoft's Windows NT. Iona Technologies Inc. (617) 949-9000.

TECHNOLOGY BUILDERS has announced Version 1.1 of its Caliber-IRM Internet-enabled requirements management tool. Now shipping for \$24.995 for a 10-client, single Windows NT server configuration, Version 1.1 includes the Caliber Document Factory, for generating up-to-date, customized specifications documents, and project requirements tracing. Technology Builders Inc. (770) 937-7900.

TALK BACK

To contact Client/Server section writers, send e-mail to firstname_lastname@infoworld.com.

Sun lingers over JDK 1.2 release

By Dana Gardner

SAYING IT NEEDS more time to present a full and stable release, the Java product team at Sun Microsystems is again delaying the arrival of Java Development Kit (JDK) 1.2 by at least two months, until November.

The postponed delivery of the next major release of the guts behind Java development and deployment from early fall to late fall will also set back the emergence of the Java HotSpot virtual machine accelerator. It will now makes its appearance around March 1999, Sun officials said last week.

HotSpot has been beset by delays. Originally slated for 1997, HotSpot's ship date was first bumped to mid-1998 and now has been bumped into 1999.

The JDK 1.2 delay is attributed to the redirection of efforts from adding features to the currently shipping JDK, Version 1.1.6, to building added speed and security into Version 1.2, according to Gina Centoni, group manager of Java platforms at Sun's Java Software division.

"Customers would rather see a more stable platform than more features," Centoni said.



The HotSpot technology rides on top of the JDK 1.2 implementations to boost Java performance. Sun officials expect the HotSpot techniques of adaptive optimization, along with a new garbage collection mechanism called Train, to significantly raise overall Java performance.

At least one ISV, citing the time needed to build a complete product, was not put off by the delay.

"It doesn't give us heartburn because we're not shipping a follow-on product until well into next year," said Rod Hodgman, vice president of marketing at NovaSoft Systems, the Burlington, Mass.,

What is keeping developers waiting

Sun's Java Development Kit 1.2 will include several enhancements.

- Symantec's Just-In-Time Compiler 3.0
- Underpinnings of HotSpot
- Updated Java Foundation Classes
- Java 2D API
- Extended security
- CDROM support

SOURCE: JAVA SOFTWARE, A DIVISION OF SUN MICROSYSTEMS INC.

maker of the all-Java Novation workflow product. "It's just a timing issue, but if we were deep into development it would be different."

Java Software, a division of Sun Microsystems Inc., in Cupertino, Calif., can be reached at <http://www.javasoft.com>.

Notebook users loyal to hardware brands

By Ephraim Schwartz

WHEN IT comes to lowering the total cost of notebook PC ownership, it appears that neither the bait of lower prices from second- and third-tier vendors nor the often promoted quality of first-tier service and support has as much value to IT managers as supporting fewer products.

"We try [to buy only one or two brands]," said Phyllis Koch, IT director for the City of Miami and a member of InfoWorld's Corporate Advisory Board. "The people-time used in learning a [new] box costs far more than the pennies saved on the hardware."

Kharim Hogan, president and CEO of N-Dimensions, a consulting company in Montreal, and also an InfoWorld Corporate Advisory Board member, also believes "familiarity with the brand" will reduce potential service and support costs. Hogan is not impressed with choice of similarly configured systems for hundreds and even thousands of dollars' difference.

"From third-party support I can get on-site service within the hour and knowledge of our in-house environment which is worth far more to me than what the manufacturer can offer me with their production line service options full of half-baked techies who don't really get the problem," Hogan said.

Price surprisingly is not a major decision point for some IT managers, who are confronted with the choice of similarly configured systems for hundreds and even thousands of dollars' difference. Just last week, Compaq Comput-

er introduced the Armada 7400 with a 266-MHz Pentium II processor, a 4GB hard drive, 32MB of synchronous DRAM (SDRAM), and a 13.3-inch active matrix display for a price of \$3,994. Meanwhile, Gateway announced the Solo S150XL with the same processor, a 14.1-inch active matrix screen, 80MB of SDRAM, and a 6.4GB hard drive for a price of \$700 less than the Compaq Armada. Micro Express (ME) price points are even lower. Using Advanced Micro Devices' 300-MHz K6-2 processor, ME unveiled last week the

\$2,299-priced NPK6300. Compaq Computer Corp., in Houston, is at <http://www.compaq.com>. Gateway Inc., in North Sioux City, D., is at <http://www.gateway.com>. Micro Express Inc., in Irvine, Calif., can be reached at <http://www.microexpress.net>.



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Enhanced IDE drive	Capacity	Access time ¹	Low	High	Average	Change from May
Fujitsu MP3043	4.4GB	10ms	\$128	\$170	\$143	-22%
Maxtor DiamondMax Ultra MP0432D	4.3GB	11ms	\$114	\$181	\$155	N/A ²
Quantum Fireball ST Ultra 34300A	4.3GB	18ms	\$175	\$200	\$187	-1%
Seagate Medalist Ultra STD43A24	4.3GB	12ms	\$150	\$206	\$177	-4%
Western Digital Corp. AC4300	4.3GB	11ms	\$133	\$231	\$170	-26%
SCSI drive						
Fujitsu Ultra SCSI M3045W	4.6GB	8ms	\$317	\$430	\$345	-20%
IBM Ultrastar 2E5	4.3GB	9ms	\$372	\$500	\$440	-1%
Quantum Fireball ST 34000S	4.3GB	10ms	\$235	\$309	\$270	N/A
Seagate Barracuda ST3452ZM	4.6GB	8ms	\$420	\$591	\$440	N/A
Seagate Medalist Pro ST3452ZM	4.6GB	10ms	\$255	\$329	\$277	N/A ²

THE LINEUP

Products	Last priced	Next pricing	Products	Last priced	Next pricing
Flatbed scanners	June 2	Sept. 1	Manufacturing printers	June 1	Aug. 31
Hard drives	This week	Nov. 2	Peripherals devices	Aug. 17	Sept. 15
Web cameras	Aug. 3	Oct. 24	Peripherals workbooks	Aug. 10	Oct. 12
Label printers	July 6	Sept. 22	RAM	July 27	Oct. 5
17-inch monitors	June 29	Sept. 8	Servers	July 13	Sept. 29

All drives are entered 1.5-inch.
All recent Street Prices highlights are available at <http://www.infoworld.com>. InfoWorld street prices are based on telephone queries of retailers, online retailers, and print advertising at computer publications and regional newspapers. Price information was collected between July 5 and Aug. 15.
1. Access time in milliseconds.
2. Model not included in May pricing survey.

THE BUG REPORT

Bugs and fixes reported to Buglyer

► **Lotus** According to Lotus officials, if you install Lotus 1-2-3 Millennium Edition on a network drive, you must use this same drive letter to launch Lotus 1-2-3. If you do not do so, you will experience the following problems: You will not be able to open a Lotus 1-2-3 workbook embedded in a Notes document if Lotus 1-2-3 is already running, and you will not be able to open a Lotus 1-2-3 workbook from the command line if Lotus 1-2-3 is already running.

► **Netscape** There is a patch for the Netscape Enterprise Server 3.5.1 running on an AIX 4.3 platform that uses server-side Java. There is a problem in the Java Garbage Collection routine in the Java virtual machine that can hang the server. The patch, P95112, can be found at <http://help.netscape.com/ffile.html>.

► **Found a bug?** If the InfoWorld Electronic form at <http://forums.infoworld.com>, for bug reports, know to <http://www.bugnet.com>, or e-mail to bugnet@bugnet.com.



Microsoft acknowledges Win98 rollover bug

By Bob Trott

THE FIRST reported bug in Windows 98 is a flaw that throws the operating system's calendar off by one or two days if it is rebooted in the initial seconds before the year 2000.

When the bug first was reported this

month, Microsoft said the flaw only affected systems if they were rebooted at the precise moment when the date rolls over on Dec. 31, 1999. However, Microsoft last week acknowledged that the bug hits on any day, causing the Windows 98 calendar to jump ahead two

days or jump back one day.

Microsoft has been working on a fix, according to a company representative.

The probability of the bug happening was rated at "one in 6 million," by Kim Akers, Windows product manager. Windows 98 is

year-2000 compliant, and the length of the rollover window varies by PC speed and configuration, she said.

The flaw was discovered by Bromley Computer Systems, in Shropshire, England. Although not necessarily major, the bug — the first confirmed flaw of Win98 — was another reason for users to examine the OS upgrade.

"It [the bug] says Microsoft is doing a decent job, because if this is the first serious bug people are encountering, Microsoft has released a pretty stable operating system," said Michael Gartenberg, an analyst at the Gartner Group, in Stamford, Conn. "There's such a level of complexity these days that it is unrealistic for any user to expect any vendor to do that complete a job of testing. That's why in many instances that job falls to users."

An update package for Windows 98 now in beta testing may include the rollover bug fix.

Microsoft Corp., in Redmond, Wash., can be reached at <http://www.microsoft.com>.

Seagate Software protects NT data

SEAGATE SOFTWARE has unveiled Replication Exec for Windows NT, a real-time data replication program that centralizes and off-loads backups from local or remote servers to reduce impact on production servers.

Replication Exec lets Windows NT data replicate from one server to another, many servers to one, one to many, and many to many. This replication is done in order to maintain current copies of selected files, directories, or volumes for off-site disaster protection or information distribution.



SEAGATE REPLICATION EXEC for Windows NT centralizes backup of NT servers for data protection.

"In today's 24-hour business environments, system administrators cannot afford to impact production servers with backup operations, nor can they tolerate 'intra-day' data loss," said Michael Colemere, vice president of product management and business alliances at Seagate.

Offering user-definable real-time and scheduled replication, Replication Exec can maintain local or remote copies of critical files for real-time data recovery.

A Seagate Replication Exec two-server license starter kit is priced at \$2,395. Additional servers can be added for \$1,195 per server. The product is available now.

Seagate Software, in Scotts Valley, Calif., is at <http://www.seagatesoftware.com>.

— Andy Stanton

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WINDOW MANAGER · BRIAN LIVINGSTON

System Information tool offers helpful Advanced features

CONFIGURING WINDOWS for the best performance—or, sometimes, configuring it so it runs at all—has been a hot topic for years. Two weeks ago, I mentioned the System Information utility that comes with Windows 98. (See, “Crash! Take advantage of these emergency Registry routines if Windows goes south,” Aug. 10, page

34.) Alert reader Steve Fuller points out some new wrinkles in this tool.

The System Information utility replaces some little-known Microsoft tools for Windows 98, such as the MsInfo32.exe file that came with Microsoft Office 95. System Information brings these tools together with a more

powerful interface.

The feature of System Information that particularly interests Fuller is its System Configuration Utility. To get to System Information in Win98, click Start, Programs, Accessories, System Tools, System Information. You then start System Configuration Utility by pulling down the Tools menu and clicking System Configuration Utility. A faster way to get there is to click Start, Run, then type misconfig and click OK.

The Advanced button of this utility provides access to troubleshooting settings that previously required detailed knowledge of System.ini or the Windows Registry.

Within the Advanced dialog box, you can configure Windows to boot up in many Safe, Safer, and Safest modes to eliminate potential start-up problems. For example, you can force Windows to start up in plain-vanilla 640-by-480 resolution VGA mode, or you can disable the Scandisk routine to avoid delays if you need to reboot frequently to test your system.

You can limit the amount of memory available to Windows to test for faulty memory chips. You can also disable Win98's “fast shutdown” features to determine whether they conflict with your software.

Unfortunately, the Help text that is available within the System Configuration Utility provides even less information about the Advanced options than you get by simply looking at the dialog box itself.

I don't propose that you start changing the Advanced options at random to see if they improve Windows. But if you manage Windows PCs, knowledge of these options may be a lifesaver some day.

Microsoft's explanation of the Advanced options can be found on its Web site at <http://support.microsoft.com/support/kb/articles/q181/r96.asp>. This document explains the symptoms of problems you may experience with Windows and why you might change various settings to troubleshoot the situation. The page also links to descriptions of little-known Win.com and Msdos.sys options so you can start Windows in troubleshooting modes.

One of the most handy System Configuration features is its Startup tab. This dialog doesn't merely show you what programs run automatically in your Startup folder. It also lists obscure programs that are run by the Registry every time you start Windows.

I recently re-installed the software for an Iomega Zip Drive but then couldn't get the re-installed software to stop asking me to register every couple of weeks. Deselecting the Remind.exe option in the Startup tab eliminated the annoyance. I could have edited this command, of course, out of the Hkey_ _Local_Machine\Software\Microsoft\Windows\CurrentVersion\Run section of the Registry. But using the Startup tab is much easier than editing the Registry manually.

Fuller will provide a copy of *Windows 98 Secrets* for his tip.

Brian Livingston's latest book is *Windows 98 Secrets (IDG Books)*. Send tips to brian_livingston@infoworld.com. He regrets that he cannot answer individual questions.



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ANNOUNCED

ORBITAL TECHNOLOGIES

last week announced a joint technology agreement with **NOVELL** to integrate Orbital's Java-based Persona Server technology with Novell's NetWare operating environment and Novell Directory Services (NDS). This integration is designed to give NetWare and NDS customers the ability to provide each user with a customizable digital persona — a move that Novell officials said they hope will further the company's goal of directing services-based intelligent networks. Orbital Technologies: (650) 565-8076. Novell Inc.: (800) 453-1267.

NET2PHONE, a subsidiary of International Discount Telecommunications, said last week it will reduce rates on its Internet-based Net2Phone PC-to-phone service for most calls made to Western Europe. Also, the company said it will reduce international rates by as much as 60 percent to the top 25 frequently called countries. For example, calls to France, Germany, Norway, Sweden, and England are now 10 cents per minute, according to sources at the company. Net2Phone Inc.: (800) 225-5438.

PACKET ENGINES, a Gigabit Ethernet vendor, last week agreed to resell voice gateways from **NETRIX** for applications involving metropolitan area networks and other projects. The Network Exchange Gateways from Netrix will be integrated with Packet Engines' routing switches in solutions that will allow enterprises to send voice traffic over Gigabit Ethernet backbones. The Netrix Network Exchange 2201, 2210, and 2550 gateways and Vodem voice-over-IP/frame-relay software include advanced PBX call features and compression capability, according to sources at the company. Packet Engines Inc.: (509) 992-9190. Netrix Corp.: (800) 949-2377.

TALK BACK

To contact Networking & Telecom section writers, send e-mail to firstname_lastname@infoworld.com.

NETWORKING & TELECOM

Cisco targets VPN market

■ Strategy includes support for a range of access options

By Stephen Lawson

CISCO SYSTEMS last week became the latest large networking vendor to target the market for virtual private networks (VPNs).

Bay Networks, Ascend, 3Com, Shiva, and other suppliers in recent months have joined specialized companies in delivering gear for VPNs, which allow private networks to be extended securely across public infrastructures.

Cisco's initial rollout focused on service provider VPNs deployed over technologies including dial, ISDN, Digital Subscriber Line (DSL), cable, and wireless. The company also promised solutions for VPNs between enterprise sites and between partner organizations.

The VPN solutions will use the

Access options

Cisco plans to introduce service provider VPN functionality using the Pix Firewall and Cisco 6510 Service Selection Gateway on a wide range of access technologies.

Access technology	Key Cisco products supporting VPNs	Available
Dial-up and ISDN	Routers, AS5600, and AccessPath access servers	Now
Digital Subscriber Line (DSL)	Cisco 900 and 6400 DSL routers, 6400 DSL access server	Now
Cable	Universal Broadband Router 720x	Third quarter 1998
Wireless	Mobile IP standard on routers and access servers	Fourth quarter 1998

SOURCE: CISCO SYSTEMS INC.

Internet Engineering Task Force's IP Security (IPSec) and emerging Layer 2 Tunneling Protocol (L2TP) standards. IPSec lets clients or network devices authenticate users and exchange encrypted traffic. L2TP will allow enterprises to use private addresses on a public net-

work. Cisco last week offered an implementation of L2TP for its Internet Operating System (IOS), used on most of its products.

Officials said the Microsoft-developed Point to Point Tunneling Protocol will be added to IOS early next year.

Some users welcomed the entry of large vendors such as Cisco into the VPN market.

"Although there are start-ups coming out with VPN boxes, few of them have support software, or if they do, it simply supports their VPN boxes," said John Scoggin, chief technical advisor at Conectiv Communications, a service provider in Newark, Del.

One analyst said Cisco's DSL and wireless VPN capabilities will give it an edge over current offerings from Ascend, 3Com, and Shiva for service provider VPNs. But he noted that a service provider VPN may not be right for everyone.

"The network manager must feel comfortable that the service provider has the wherewithal to manage those services," said John Morency, principal analyst at Renaissance Worldwide, in Newton, Mass.

Cisco Systems Inc., in San Jose, Calif., can be reached at (408) 526-4000.

Sprint initiates trial voice-over-IP service

By Elinor Mills

SPRINT last week began a U.S. market trial of a service designed to let customers make phone calls over Sprint's IP-based backbone at cheaper rates than traditional telephone calls placed over the Public Switched Telephone Network.

The service, dubbed Sprint Call Alternatives, will be offered to customers in Atlanta, Dallas, Los Angeles, San Francisco, and Seattle for a limited time. The trial customers will be able to make calls throughout the United States, including Puerto Rico and the U.S. Virgin Islands, as well as to India, Japan, Mexico City, South Korea, and Taiwan, Sprint said in a statement.

It will cost carriers less to provide calls placed over an IP network than calls placed over regular phone networks, and the cost differential is greater for international calls, according to Sprint. The company did not say how much cheaper the calls under its new service would be.

Sprint will prebill the credit cards of customers of the new trial service in increments of \$10 and \$25. To use the service, customers dial a local number to reach the Sprint IP network and complete calls by entering a personal identification number and the number they are calling. Gateways link the Sprint IP network and local phone networks

at either end of the call.

"The market trial will test many issues, including technology, market acceptance, and price. Before we leap into offering an IP-based telephone service, we want to make sure it is as reliable, as robust, and as easy to use as possible," said Terri Morrow, vice president of emerging

technologies in Sprint's Consumer Services Group. "The quality of voice over IP has improved to the point where we feel comfortable offering it to our customers."

Although carriers such as Sprint have traditionally been wary of IP telephony — seeing it as a threat to their traditional voice services —

they are moving slowly into the IP telephony arena. AT&T, for example, introduced its WorldNet Voice service in January, allowing users to make voice calls over its WorldNet IP-based network.

Sprint Corp., in Kansas City, Mo., can be reached at <http://www.sprint.com>.

Elinor Mills, in San Francisco, is an editor at large for the *ITC News Service*, an InfoWorld affiliate.

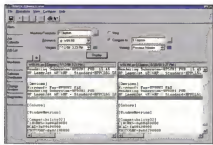
Mobile management

Callisto Software prepares to launch Orbiter 2.0

By Emily Fitzloff

CALLISTO SOFTWARE next week plans to release Orbiter 2.0, the latest version of its mobile systems management solution, which targets remote users on low-bandwidth connections.

In addition to its change analysis, anti-virus, job scheduling, and centralized alerting capabilities, Orbiter 2.0 includes software distribution capabilities; mobile profiles so administrators have relevant information for managing mobile users (such as connection type); and an architecture that is optimized for mobile communications and transparent to remote users, said Paul Harte, pres-



CALLISTO'S ORBITER 2.0 gives network managers individual profiles for mobile users.

ident of Callisto.

This mobile architecture enables Orbiter 2.0 to manage mobile systems even when users are offline and offers message queuing, compression, checkpoint/restart, and

"delta technology" so only changed information is transferred, Harte added.

"I like that [Callisto] added intelligence... so Orbiter knows users' connection type. However, they are still missing inventory capabilities," said Rick Villars, director of network software at International Data Corp., in Framingham, Mass.

Available now, Orbiter 2.0 runs on Microsoft Windows NT Server, and supports Windows 95, 98 or NT clients. Pricing starts at \$5,000 per server and \$150 per client.

Callisto Software Inc., in Wheaton, Ill., can be reached at <http://www.callisto.com>.

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 e-business tools

Orion helps IBM bring its platforms together

By Ted Smalley Bowen and Ed Scannell
WHILE IBM ENCOURAGES ISVs to adopt its Project Orion Java-based application management technology, the framework could do more in the short-term to help the company unify its own disparate platforms.

At the Software Development East conference last week, IBM unveiled its Project Orion Java-based application management scheme, an outgrowth of its OS/2 Warp Server WorkSpace On-Demand technology. (See "IBM mobilizes Java clients," Aug. 17, page 1.)

Project Orion offers a centralized application distribution and management infrastructure for Java applets and applications running on a wide range of client devices.

Although the technology expands to non-IBM platforms and any Java environment, it

is one example of Java's capability to make IBM's platforms more uniform, according to Eric Brown, an analyst at Forrester Research, in Cambridge, Mass.

"It's part of IBM's effort to use Java ... to get [its platforms] unified behind one run-time environment," Brown said.

Project Orion will yield a server-based management framework, through which Java applets and applications are centrally maintained and dynamically distributed according to individual user profiles, IBM officials said.

"IBM is taking scalability, availability, [and] security and marrying those with technologies our customers feel are important [including] Java, the Web, [and] HTML," said Senhal Parikh, Project Orion brand manager.

Orion provides Secure Sockets Layer support and single sign-on for Web access, IBM officials said. Due for formal announcement in October, the management infrastructure is slated initially for Windows NT, OS/2 Warp Server, OS/390 and AIX, and later on Solaris and OS/400.

IBM, in Armonk, N.Y., can be reached at <http://www.ibm.com>.

Project Orion is being developed as part of IBM's eNetwork technology initiative.

Windows

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Solutions

page 70

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REGULATORY ROUNDUP

A regulatory newsbyte from the United States



WASHINGTON AT&T has appealed a Federal Communications Commission ruling that allows a joint venture of Sprint Communications and Mexico's Telmex to offer long-distance services between the United States and Mexico.

The long-distance giant filed a motion with the FCC this month, requesting it to stay the license and arguing that it will create an unfair advantage for Telmex-Sprint and will harm AT&T and other carriers in the United States, as well as U.S. and Mexican consumers.

Although the FCC had agreed to grant the license, it did say issues still remain to be resolved in order to open up Mexico's telecommunications market. In particular, it has asked Telmex to lower the fees it charges U.S. carriers to connect calls to Telmex's network in Mexico. These fees are known as interconnection charges or settlement rates.

But AT&T said by granting the license, the FCC is actually undermining efforts to open the Mexico market and enabling Telmex to put a "price-squeeze" on U.S. carriers. AT&T argued that Telmex, which was privatized in 1990, is a "government-maintained" monopoly that extracts from U.S. carriers \$857 million per year, at least five times as much as Telmex's costs.

Meanwhile, Telmex called AT&T's appeal a "last-ditch legal maneuver to avoid competing with us in the United States."

Analysts were skeptical of AT&T's legal effort. "They're doing regulatory dances instead of rolling up [their] sleeves and going after [Telmex] in the marketplace," said Ron Cowles, an analyst at Dataquest, in San Jose, Calif.

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- **nFast/KM Accelerator**360
- **CryptoSwift II**360
- **Security Watch,**
by **Stuart McClure**
and **Joel Scramby**360
- **Loose Cables**36H

SPEEDING ENCRYPTION

A key concern for IT managers considering encryption security is the drag on performance



caused by encryption/decryption processing on the server. nCipher's nFast/KM Accelerator device lets administrators ward off performance loss by off-loading encryption tasks from the processor. Rainbow Technology's CryptoSwift II add-on is also designed to tackle encryption processing, but it doesn't offer the same performance benefits as nFast/KM Accelerator. See our reviews on page 36D.

BACKORFICE SCARE

In this week's Security Watch column, Stuart McClure and Joel Scramby shed some light on the recent hacker threat that surfaced at the DefCon hacker conference in Las Vegas. Among the new hacker tools creating a stir was BackOffice, from Cult of the Dead Cow. This hacker application seeks to control Windows 9x machines via a Windows OS vulnerability. See page 36D.

HOW WE REVIEW

Enterprise Networking reviews examine new products, focusing on their usability, features, and suitability to task. Our expert reviewers rate shipping products on a scale of cold to hot. The authors do not employ the extensive analyses used in Test Center Comparisons, so their conclusions may be different.

TALK BACK

Questions, comments, rudos? Send a message to the editor at renee_gotcher@info.world.com. Please include "Talk Back" on the subject line. To reach a staff author, use this format: firstname_lastname@info.world.com.

Product Reviews

► Fast Ethernet switch

Bay boosts feature set

By Brooks Talley

WHILE networking hardware vendors are shifting their focus from speeds and feeds to distinguishing features, Bay Networks has made big changes to its Fast Ethernet switching line with the BayStack 450. The 450 is a solid buy for mixed 10Base-T and 100Base-T environments, offering a complete menu of modern switch features. It's especially well-suited for BayStack shops because it will plug right in, but it's also a reliable performer for a stand-alone switch or the first switch in a planned stack.

Some of the 450's more advanced features include Internet Group Management Protocol (IGMP) snooping to support IP multicast efficiently and 802.1q support for virtual LAN trunking interoperability. IGMP snooping will become increasingly important in coming years as multicast applications proliferate. IGMP allows the BayStack 450 to only send multicast traffic to those ports that need it.

THE BAYSTACK 450 offers 24 10/100Mbps autosensing, full-duplex ports, and one uplink.

Aside from these special features, the BayStack 450 offers a standard configuration and 24 full-duplex ports with 10/100Mbps autosensing and one modular port that can take either additional ports or a Gigabit Ethernet uplink. From a performance standpoint, it receives stiff competition from Extreme Networks' Summit48 Switch, which offers 48 10/100Mbps ports capable of full wire speeds and two Gigabit Ethernet uplinks at a lower overall price per port. (See Enterprise Networking Product Reviews, April 27, page 66C.)

Installing and configuring the BayStack 450 was a snap: first by using the serial port, then via Telnet after I had the switch's IP address configured. Like most switches, the 450 uses a text-based menu for con-

figuration. There's also a Web management option in the works, but it wasn't available as of press time.

The unit I tested had a Gigabit Ethernet uplink in its Media Dependent Adapter port. Bay offers both shortwave and longwave Gigabit modules as either a single port or redundant single port module.

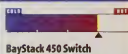
During my tests, the 450 correctly autosensed 10Base-T and 100Base-T connections at full- and half-duplex, and its 802.1q virtual LAN support worked correctly with the Cisco 2900 I tested with it.

Like most other switches in its class, the 450 also offers capabilities for SNMP and RMON standards, including simultaneous RMON 1 and RMON 2 on every port.

Although there is no compelling reason to choose the 450 over high-



THE BOTTOM LINE



BayStack 450 Switch

This Fast Ethernet switch is a solid switch—with 10/100Mbps on every port and an optional Gigabit Ethernet uplink—that should fit well into most networks.

- **Pros:** Straightforward configuration; Gigabit Ethernet uplink; IP multicast support; RMON support.
- **Cons:** Web management not available yet; uplink modules not hot swappable.
- **Bay Networks Inc.,** Santa Clara, Calif. (800) 998-2400; <http://www.baynetworks.com>
- **Price:** \$3,600
- **Platforms:** Not applicable.

er performers at competitive price points, it certainly offers a solid array of appealing features and is a stable, reliable performer suitable for most environments.

Test Manager Brooks Talley (brooks_talley@info.world.com) has specialized in networking technologies, Unix, databases, IP and the Internet, communications, and application development in his 11 years in the IT industry.

► PC Card modem

RealPort combines access choices

By Dan Seoane

FOR TELECOMMUTERS or frequent travelers, keeping in touch via LAN or modem remains challenging. One danger is the ease with which you can break or lose your laptop connectors. Xircom, which built the first portable network adapter, has engineered a dream come true: the RealPort CardBus Ethernet 10/100+Modem 56 PC Card, which ditches the dreaded dongle, or pop-out jack, that holds your network or modem cables. This boost will save your IT team from stocking lots of extra dongles and ease user headaches.

However, the change comes with a concession. The size of the RJ-45 connector on an Ethernet cable is equivalent to the height of a Type III PC Card slot. So if you are



THE REALPORT connects modem, phone pass-through, Ethernet, and cellular lines.

already using a SCSI or other PC Card (besides a modem or network card) and don't have a third card slot, then you will have to give up the other card for the RealPort.

I was able to install the RealPort in my Toshiba Techr 720 CDT in about 4 minutes; it's just as easy to set up in Windows 95, Windows 98, or Windows NT 4.0. Also included are drivers for Windows 3.1 and DOS. Third-party drivers for other

OSes can be found on the Internet.

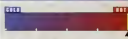
The RealPort supports both half- and full-duplex-mode Ethernet and Fast Ethernet and uses auto-negotiation. I connected easily to my Extreme Networks Summit48 10/100Mbps Switch. The integrated modem uses the KS56flex standard and supports 56Kbps speeds. You'll be able to upgrade to the new V.90 standard by flashing the RealPort's 4MB Flash ROM. (Xircom said this update should be available in September via the Web.)

You can fax as fast as 14.4Kbps. Also built into the connection is a phone pass-through port, so you can plug in a phone without having to use a line splitter.

For traveling around the world, Xircom's Global Access makes it very easy to reconfigure your modem to meet local standards. Xircom has added a cable port for GSM, DCS, PCS, and AMPS cellular networks using an optional cable that plugs into most phones.

If you support real road warriors and rely on laptops as much as I do, then the RealPort CardBus Ethernet PC Card will be a great asset to your arsenal.

THE BOTTOM LINE



RealPort CardBus Ethernet 10/100+Modem 56

This Xircom modem is a telecommuter's best friend. It's also a great value; IT managers won't have to keep replacing lost cables or broken connectors.

- **Pros:** Low price; integrated 10/100Mbps network card and KS56flex modem; built-in connectors; worldwide connectivity with automatic dial-up configuration; cellular-ready; upgradeable to V.90.
- **Cons:** Requires Type III PC Card slot.
- **Xircom Inc.,** Thousand Oaks, Calif. (805) 376-9300; fax: (805) 376-9311; <http://www.xircom.com>.
- **Price:** \$399 per unit (or bulk pricing).
- **Platforms:** Windows 3.1, Windows 95, Windows 98, Windows NT.

Technology Analyst Dan Seoane (dan_seoane@info.world.com) covers networking and telecommunications products.

► Data encryption

nFast/KM improves Web performance

By Mark Joseph Edwards

PROVIDING SECURE, encrypted communications is a paramount concern for most network administrators, especially when it comes to online banking or running Web-based merchant stores. But Web servers that provide encrypted communication can experience significant performance degradation under heavy traffic.



nFast/KM Accelerator

This encryption device lets administrators increase performance by off-loading encryption tasks from the processor.

- **Pros:** Significant performance increase; no security key management.
- **Cons:** No support for Digital Rights or Internet Information Server.

► **nCipher Corp.,** Andover, Mass. (978) 661-6487; <http://www.ncipher.com>.
 ► **Price:** \$3,500 to \$12,000, depending on features and performance.
 ► **Platforms:** Windows NT 3.5 and later; various flavors of Unix.

nCipher provides a good solution to this problem with its new encryption tool, the nFast/KM Accelerator. Any shop running a heavily trafficked, encrypted Web server would benefit from the unit's noticeable performance gains.

The nFast/KM is a hardware-based encryption accelerator that off-loads the processor-intensive operations from a system's CPU, letting the system serve many more encrypted transactions per second (tps). nCipher makes several versions of nFast, each sporting different performance levels. I reviewed the nFast/KM 300 version of the accelerator, which can perform 300 tps.

The product provides security key management and offers secure-key storage and generation, policy storage and renewal, and the enforcement of access control lists for key access. Though the most obvious use for this unit is in conjunction with a Web server, the nFast/KM supports Microsoft's CryptoAPI, Netscape's NSAPI, and RSA's BHAPI as well, and thus it is also well-suited to the development of secure applications in-house and



nFAST UNITS are available as external or internal units.

for use with third-party software built around these three APIs. But though the nFast/KM does integrate with some of the more popular Web servers in use today—including Netscape Enterprise Server 3.5 and Apache-based Stronghold—it doesn't currently work with Microsoft's Internet Information Server. Officials at nCipher said at this time Microsoft doesn't provide the necessary hooks for proper integration.

With the nFast/KM, nCipher offers network administrators the flexibility necessary to integrate the product into any number of different applications, including Web servers and certificate servers. The device supports several widely used encryption algorithms and protocols, including Secure Sockets Layer, Versions 2.0 and 3.0, HTTP

► nFAST/KM page 36F

► Data encryption

CryptoSwift II's performance gains run a close second to nFast/KM's

By Mark Joseph Edwards

ALTHOUGH SECURE Internet-commerce Web sites are flourishing today, running a Secure Sockets Layer (SSL)-enabled Web server can take its toll on the processor—in many cases, Web traffic can get to a point at which the processor simply cannot keep up. Rainbow Technologies addresses this with CryptoSwift II, a PCI-based add-on card that off-loads the processor-intensive computations involved with encrypted communications. CryptoSwift makes a good addition to any application experiencing performance-degrading traffic loads.

CryptoSwift is capable of running out-of-the-box on several Web servers, including Netscape's Enterprise Server, Versions 2.0 and later, C2Net's Stronghold, and Microsoft's Internet Information Server (IIS), Versions 2.0 and later. (nCipher's device does not support IIS; see review at left.)

But CryptoSwift also has APIs that cover numerous encryption methodologies, including Microsoft's CryptoAPI, RSA BSAFE 3.0, RSA S/PAY, SETnet, Netscape NSAPI, Mathean NetPAY, Intel



CryptoSwift II

This add-on is easy to use and install but doesn't offer the same performance benefits as nCipher's nFast/KM Accelerator.

- **Pros:** Easy to install and configure; supports Internet Information Server.
- **Cons:** Slower than the nFast/KM.

► **Rainbow Technologies Internet Security Group,** Irvine, Calif. (888) 667-4728 (toll-free); <http://www.rainbow.com>.
 ► **Price:** \$799 to \$1,899, depending on speed.
 ► **Platforms:** Windows NT 3.5, 3.51, and 4.0; BSD 3.0; FreeBSD 2.5; Linux 2.0; Mac OS 7.5, 7.6; Sun Solaris 2.5.1; and Windows NT 3.5, 3.51, and 4.0. It also supports several well-known protocols.

CDSA, and Entrust.

CryptoSwift includes device drivers that are compatible with several popular OSs, including Linux 2.0, Mac OS 7.5 and 7.6, Sun Solaris 2.5.1, and Windows NT 3.5, 3.51, and 4.0. It also supports several well-known protocols.

► CRYPTOSWIFT page 36F

SECURITY WATCH • STUART MCCLURE & JOEL SCAMBRAY

BackOffice proves what we already knew: Win95/98 isn't secure

THIS YEAR'S DEFCON hacker conference promised to provide a number of new hacker tools and techniques, not the least of which was demonstrated and released at this year's show: BackOffice (or BO) by the Cult of the Dead Cow (CDC).

We decided to test its claims. BO is a Windows 9x executable that takes advantage of known API calls to provide services and information to a remote computer. It runs only on Windows 95 and Windows 98, so Windows NT Workstation and Server users are not currently vulnerable.

Microsoft's "response"

Microsoft's response (<http://www.microsoft.com/security>) was swift and predictable: This is a feature, not a bug—and for the most part, we agree. Microsoft designed the OS to allow for a wide variety of documented API calls that are meant to manage the OS. If you

can install a product such as BO on a remote machine as a root user (which is "any" user in the Win9x world), then remote control and total domination of that system is possible.

How bad is it?

Of course, all of this talk is fruitless if a hacker cannot install the BO's server component on the remote system. To do so, a hacker must perform the following tasks: 1. Execute `boexec.exe` on the target system; 2. learn the IP address of the target system; and 3. discover an open User Datagram Protocol (UDP) path to the box.

The first hurdle for a hacker to overcome is remotely executing the BO server. How could a hacker get BO on your Win9x clients? Just pick a technique. Physical access or unprotected shares are the obvious choices, but hackers could draw on a number of remote exploits to run the BO executable. Remote registration tools could be used to install BO in the various start-up keys, as could executable e-mail attachments, malicious script components clicked on at a Web site, viruses, or even a buffer overflow such as the one demonstrated by CDC in April. (See <http://www.infoworld.com/printlinks>.)



Once a system has been hit with BO, it runs invisibly. So detecting and cleaning it from a system requires the removal of the 122KB "exe" file from the system (usually stored in `C:\WINDOWS\SYSTEM`). Also, you must remove the value data within the `Default value` name in the following registry key: `HKCY LOCAL_MACHINE\SOFTWARE\MICROSOFT\Windows\CurrentVersion\RunServices`.

Once a machine has been exploited with BO, the possibility that a hacker installed a backdoor is always a threat. To detect these, look for other programs (such as `netcat`) in neighboring registry keys.

The effects of an infected machine should be put into perspective. For shops using a well-configured proxy firewall or a Network Address Translation (NAT) firewall or router connecting to the Internet, the vulnerability is severely limited. A well-configured proxy firewall would simply not allow access to a machine behind it, especially on UDP ports such as 31337 (the default for BO). And NAT firewalls or routers configured with dynamic NAT would make it next to impossible to directly access a machine that has been hit by BO, because its IP address is shared among many other machines on that network.

An ounce of prevention

To nullify BO's effect on individual Windows 9x machines on the Internet, you can use a program such as PCFirewall from Network Associates to restrict the traffic coming in and out of the machine. We find it to be one of the best ways to restrict the control and vulnerability of Windows 9x machines.

Aside from that, we can only offer most of the obvious preventative solutions: instruct users to never run an .exe received via e-mail or a disk if they cannot verify its legitimacy; take the browser warnings seriously about downloading or executing code from Web servers; keep up with all OS and product patches to avoid buffer overflow conditions, security bugs, and possible OS breaches; and double-check your share configurations.

Beyond taking these steps, Test BO as you would any virus: Check for its existence and eradicate as soon as you detect it.

What do you think about BO? Send your thoughts to security_watch@infoworld.com.

Test Center Support Manager Stuart McClure and Technology Analyst Joel Scambray have managed information security in academic, corporate, and government environments for the past nine years.

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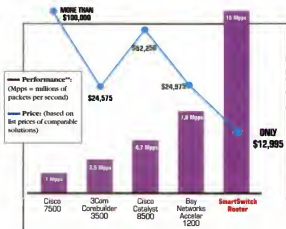
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CryptoSwift

Continued from page 36D

known secure protocols, including SSL, Secure Electronic Transaction (SET), Secure Shell, and IPsec, among others. But CryptoSwift doesn't support some of the popular algorithms supported by the nFast/KM, such as PGP — although it does support a wider variety of third-party APIs than the nFast/KM. All in all, if you're planning to use either product for in-house application development, this may become a concern.

The CryptoSwift/EN version of the device is Ethernet-enabled, which lets it perform encryption work for numerous servers across a network. Although both versions are capable of 200 private key decryptions per second, this is about 30 percent slower than the competing nFast/KM product, which can perform as many as 300 decryptions per second.

I was quite surprised at how easy it was to install CryptoSwift; it was



CRYPTOSWIFT II is an easy-to-install, stand-alone PCI card.

much easier to install and configure than nCipher's product. Whereas the nFast/KM requires a single-ended SCSI-2 controller, CryptoSwift is a stand-alone, jumperless PCI card, and installing it was as simple as plugging it into an empty PCI slot. I installed it on a Pentium 200-MHz system running NT 4.0 and IIS 3.0. Next I loaded the device drivers, which was a quick, painless process that required no intervention on my part.

But installation and configuration remain secondary to the cause at hand — improving encrypted transaction performance — and in this area the nFast/KM surpasses CryptoSwift. The company claims

the CryptoSwift card can perform SSL encryption operations in as fast as 5 milliseconds, and I did see a significant increase in my server's SSL performance. For example, on my particular test system, with a medium load, the speed increased from 17 transactions per second to 46 transactions per second, and response times were reduced from 192 milliseconds to only 48 milliseconds.

However, compared with the nFast/KM's performance results, CryptoSwift is somewhat slower.

Although nCipher seems to have had trouble developing a plug-in for IIS, Rainbow Technologies has come through fabulously with an easy-to-integrate solution, despite the fact that it takes a backseat to nFast/KM in terms of performance. Nonetheless, if you're using IIS for secure Web transactions, definitely give CryptoSwift a very close look.

Mark Joseph Edwards (mark@ntsecurity.net) is a writer and network engineer/security consultant in Houston.

nFast/KM

Continued from page 36D

Secure and Secure HTTP, Secure Electronic Transaction, Secure MIME, PGP, RSA, Digital Signature Algorithm, and Diffie-Hellman.

The nFast/KM is available as either an internal or external hardware unit, both of which connect through a standard SCSI-2 single-ended controller, and it comes with or without a built-in key manager. The internal unit mounts in a 5.25-inch drive bay; the external unit sits in its own cabinet.

I installed the nFast/KM on an Intel-based 233-MHz Pentium system running Linux and Netscape Enterprise Server. There is no wizard-based installation program, but I managed to get the software installed without major difficulty.

I did, however, have to manually decompress the files and run a supplied script file which copies files into their proper locations, which is typical for Unix-based software installations. In addition, connecting to the Netscape Enterprise

Server required that I manually edit the Web server's `obj.conf` configuration file to include a reference to the nFast/KM software object.

I could test the nFast/KM Acceleration using an nCipher program called `SSLSOAK` that is based on freeware `SSLKEY`; nCipher modified the `SSLKEY` code to include the crypto-saturation testing performed by `SSLSOAK`. Running `SSLSOAK` against my Linux-based Web server (which places a heavy SSL load on the server) did show significant performance improvements that let the Web server process its transactions much faster and with less system overhead.

The end result is quite impressive: Whereas this system once processed a paltry 6 tps, it is now processing an average of 125 tps with the nFast/KM installed.

Overall, the nFast/KM is a great addition for encryption-based applications, especially Web servers. If your servers suffer from the heavy processing required by encryption applications, consider this product.

Mark Joseph Edwards can be reached at mark@ntsecurity.net.

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LOOSE CABLES • TEST CENTER

RBOC service continues its decline and Netwit makes vacation plans

HAVE YOU NOTICED how awful regional Bell operating company (RBOC) service has been since deregulation? We sure have. For one teleconnected rat, Pacific Bell has managed to screw up jobs after job during the past two years. The most recent problems happened last month when he ordered an IDSL line from Covad and

decided to convert his PacBell ISDN connection to a POTS line at the same time. (The IDSL line plays a role in a Test Center Analysis of "last mile" connectivity options coming later this year.)

PacBell said the ISDN-to-POTS conversion was an easy job that could be handled at the



telco switch and promised downtime of about 20 minutes. Our rat scheduled the work for a Friday. When the day came, however, he realized he was going to need the IDSL line a little longer. He called

PacBell's ISDN department at 8:00 a.m. and asked to postpone the conversion for one week. No problem, he was told. Wrong. At 5:00 p.m. his ISDN dial tone dropped, and PacBell didn't restore it until Sunday night.

The following week, after our rat's IDSL pipe was installed (Covad did its job splendidly, by the way) the day for the ISDN-to-POTS conversion arrived again. This time, instead of performing the job from the switch, PacBell sent a lineman out. He ran a new wire that broke the IDSL connection. If he hadn't been around to correct the technician's work, our rat would have been IDSL-less for awhile.

A PacBell veteran we know says the decline in service at his company has been so extreme that he's getting out. He says the company cares about how many tickets its linemen handle — and little else.

So where are all those other phone companies we were promised would appear after deregulation? The rat in this story wonders if the deal was a convenient way for the telcos to avoid accountability and allow service to slide. He thinks it's time to be his own phone company.

Get ready to match the stars

Hi, this is Netwit speaking. I'm the "loose cable" whose glory shot graces this column every week. Here's a story from my formative years. In the 1970s, I'd rush home after school to a flagon of Kool-Aid, extra-perfect Oreos, and enough game shows to rot my teeth. The best was Match Game. I got that Gene Rayburn had a taste for the ladies. I got that Richard Dawson was always picked in the money round because Brits are intellectual or something. I got Charles Nelson Reilly.

Beyond the regulars, there were lesser lights that came and went as their showbiz careers were born, flamed, and died. But great or small, they all participated together on the show, and I imagined them parrying afterward, too, inviting one or two of the more attractive contestants up to the hotel suite. Rayburn brought the booze and the Super-8, Dawson had some toys, and Nelson Reilly liked to puff his pipe and watch.

One day I found out that Match Game was going "on hiatus," a euphemism even my tender ears understood. The point of this tale is that Loose Cables is going "on hiatus" too. So on behalf of the Test Center, so long for now.

Part of our goal in this space was to let you know that the rats have at least as much fun as those swingers on Match Game. In the scheme of things, we're not Richard Dawson or Gene Rayburn or even Fannie Flag. More like Dick Gautier. But that's cool. The B-list had its moments, too, and everyone was invited to the suite.

This week's Loose Cables was written by Chip Brookshaw, Dan Sozane, and Netwit. Godspeed or good riddance? Let us know at loose_cables@infoworld.com.



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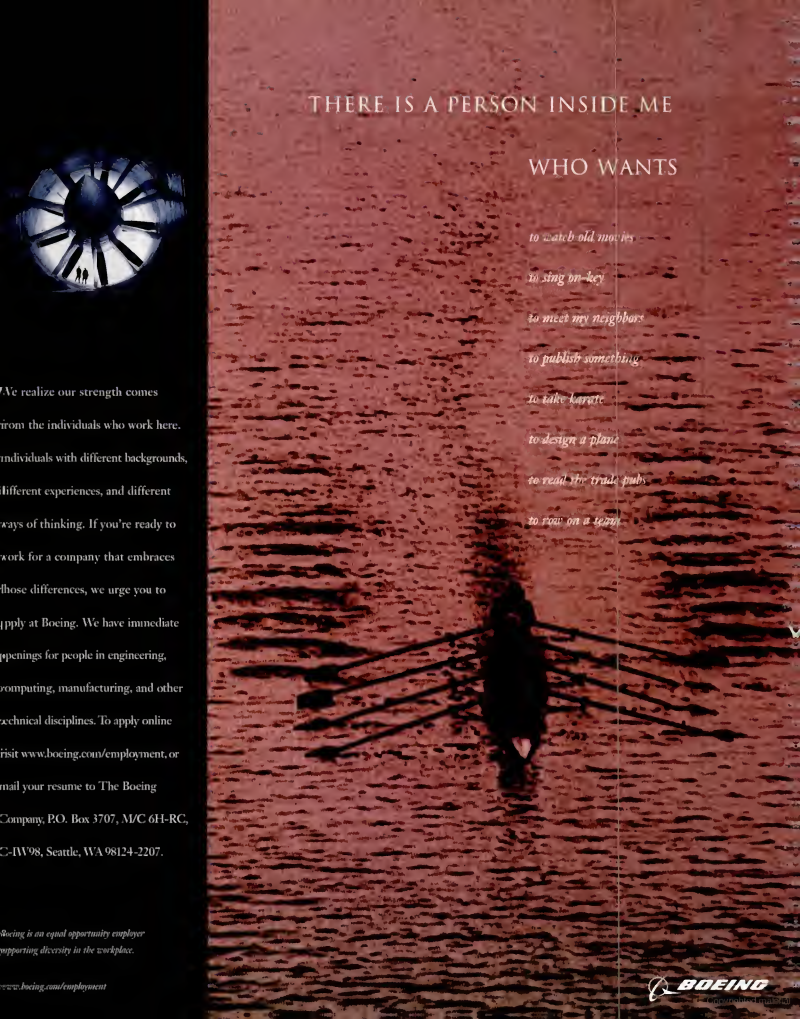
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Women in technology international

perspective

by Carolyn Leighton-Tal

Entrepreneurs - The Picassos of Business

As a person who always needed, from early childhood on, to create my own style of doing everything, I was absolutely delighted to hear Kim Polese, co-founder, president and CEO of Marimba, Inc., share the following advice from Tom Peters during her keynote speech at the 1998 WITI Technology Summit:

Keep trying. Read odd stuff. Visit odd places. Hire odd people. Cultivate odd hobbies. Ask dumb questions. Don't back away from passion. Embrace failure. Embrace bigger failures even more. Constantly reorganize. Listen to everyone. Don't listen to anyone. Get fired. Get fired more than once. Decentralize. Decentralize again. Do the opposite of whatever you have been doing the last three years. Spend 50 percent of your outside time with wacky outsiders. Eat a different breakfast cereal. Spread confusion in your wake. Vary your pattern. Take a new route to work. Take off your coat. Roll up your sleeves. Take off your shoes. Get out of your office. Get rid of your office. And, above all, avoid moderation in all things.

While such thinking comes naturally to entrepreneurs, it is particularly affirming to discover that Tom Peters, a highly-respected consultant to business power brokers, promotes the value of non-traditional business styles.

While phrases like "out of the box thinking," and "embracing change" are now hot business concepts, those of us leading change continue to experience major frustration when dealing with members of the financial community. These are the people, such as bankers and venture capitalists, who can help our businesses grow, who praise our pioneering spirit but continue to insist on busi-



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ODD PEOPLE.
CULTIVATE ODD
HOBBIES.
ASK DUMB
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DON'T BACK AWAY
FROM PASSION.**

ness plans and five-year projections. But these traditional benchmarks have proven to be questionable tools of measurement in today's fast-changing business world.

For example, companies such as Yahoo!, Excite and hundreds of others whose leaders have had the courage to try new ideas and insist on a different style of doing business are the ones capturing the attention of Wall Street. And while a remarkable number of women are demonstrating that their unique styles are paying off big time in the business world, they continue to face old-time thinkers who have the power to perpetuate barriers and obstacles when those women go to them for funding.

As entrepreneurs, we think of ourselves as the Picassos of the business world: business artists who approach our product and our company as a blank canvas awaiting our signature and innovation. Our creative process, instinct and dreams drive us. It is not unusual to us to be at odds with the establishment because our achievements often come from some higher authority.

This column is dedicated to all the artists of the business world, whose very being and creative process depend on experimentation and innovation. It's dedicated to those of you who have had the courage to resist the pressure of conforming to someone else's idea of how things are supposed to be done, to those who struggle to define and explore alternative ways of doing your job, creating a project, building a company, positioning a product or solving a problem.

It is this quest for fresh ideas, inspiration and new ways of thinking that brings more and more women to WITI conferences. The 1998 WITI Technology Summit was truly exhilarating. Three days of interaction with some of the most accomplished women in technology, women of different ages and backgrounds, women regularly featured on CNN, NBC and magazine covers, with one recurring theme: how each of them pioneered and accomplished startling results by resisting the pressure to conform, and by experimenting, exploring, innovating and experimenting.

As more women capture positions of influence in venture capital, banking, and other financial environments, I believe we will see a shift towards more creative financing of broad ranging products and services. I am confident this will result in building more positive relationships with emerging markets within technology, and result in a win/win for everyone involved.

Carolyn Leighton-Tal is the *Founding Executive Director of WITI*. She can be reached at carolyn@witi.org.



Cable Launches Into the Future

By Deanne McClain

Opportunities continue to rise with the explosion of the telecommunications age. Businesses are reaching out to share more information faster, and the cable industry is responding, boasting multifaceted telecom services at record speeds.

Cable, which was originally designed to improve bad television reception, has burgeoned into a multibillion dollar industry which enters the living rooms of some 70 percent of American homes.

With the introduction of hybrid fiber coax by AT&T and Antec 10 years ago, cable companies began to envision expanded cable services. This year, with the first large-scale deployment of digital television boxes, cable modems and cable telephone, companies like Media One and Cox Communications are beginning to introduce digital cable services and high-speed Internet access.

"We're no longer just a sleepy little cable company," says Robin Sangston, senior counsel for communications at Cox Communications. As a member of the board of Atlanta's chapter of Women in Cable & Telecommunications (WICT), Sangston believes that the industry's continuing expansion will provide tremendous opportunities for women in telecommunications. WICT, whose mission is to "empower women through leadership, networking and advocacy," currently boasts more than 4,000 members, 350 of whom belong to the Atlanta chapter.

The advances made due to fiber optic cable have everyone in the industry looking toward the future. Bob Stanzone, president and COO of Atlanta-based Antec, believes that these technological advances are a profound phenomenon for homes and businesses. "Cable has

become a telecommunications network and that's a big deal," he says.

Standing behind the cable companies are people who believe there are limitless possibilities. Bill Gates' investment of \$1 billion in Comcast Cable and AT&T's recent acquisition of TCI, a cable and telecommunications company, are two such examples.

In his recent keynote address to the National Cable Television Association (NCTA), Gates predicted that the next ten years would see a new array of services offered by cable operators.

Microsoft also announced at the NCTA convention that in its desire to work with the cable industry, it has formed relationships with Cisco Systems Inc., Motorola, Inc. and CableData. Stanzone says that AT&T's acquisition of TCI changes the landscape for everyone due to new facilities-based local access that offers consumers two ways to hook up their phones. "It may also spur competition between the phone companies that the Telecommunications Act was supposed to accomplish in 1996," he says.

The landscape has never appeared greener for those in the telecommunications industry. More competition will surely bring more jobs and growth for those who provide service to that industry. Companies like VRG, Inc., an Atlanta-based consulting firm, are in the forefront of job development in telecommunications.

Kathy Van Zant, president and CEO of VRG, believes that there will be more acquisitions and mergers, providing more jobs in engineering and IT areas, especially for those with consulting or customer support experience. With the development of additional broadband products, there will also be more technical positions available.

"There are too few women in operational and technical jobs," Van Zant says. "It would be a great boon to the industry to see women get involved in the technical and equipment provider side."

Van Zant also co-chairs the board of WICT in Atlanta and is pleased to report that the men in telecom companies are tremendously supportive of the advancement of women. Van Zant notes that there is plenty of room for more high-level women in cable, particularly in

continued on WITI page 2

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the equipment and operations side. While several women have high-level positions in programming, there is ample room for more.

"Doors are opening even wider to women in this industry," she says.

Predictions abound for the future of cable. For example, many believe that those working at home will become more efficient due to the latest cable technologies; commercial businesses can expect to be wooed by the cable industry as well. Cathy Lee Eckert, call center manager for Prestige Cable, based in Atlanta, says that

the increased bandwidth of fiber optics for both video and audio transmission opens up a whole new world and points out that businesses with more than one location can link up to share data by leasing this fiber. "This is a huge, untapped commercial market," she says.

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She doesn't recognize road blocks, just connections.

microsoft.com/jobs/diversity.htm

As the first African American female Premier Support Manager on the East Coast, Pam Young knows how to make her way in this world. She is the primary Microsoft contact to clients like Smith Barney and Merrill Lynch. Working as both a technical consultant and product evangelist, Pam insures that Microsoft support complements the clients' business needs. And after more than 15 years in high tech; as a programmer, support manager and development manager, she says the cohesive environment at Microsoft is unbeatable. Take it from a wife, mother of two and Business Woman of the Year: stay focused, think big, and nothing will stand in your way.

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Lucent Technologies' business products and services to regional Bell operating companies, such as BellSouth. Internet telephony servers, Internet call centers and universal messaging are just a few of the products she has brought to market.

Williams began Aegis Systems in 1981 with funds from a second mortgage on her home and guidance from the U.S. Small Business Administration (SBA). She has since built Aegis Systems into a multi-million dollar enterprise, which was named "Outstanding Small Business Subcontractor of the Year" in 1986 and "Small Business Prime Contractor of the Year" by the SBA in 1989 and 1990.

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4th Annual WITI Conference Draws 5,000 to Santa Clara

WITI's fourth and most successful annual conference to date drew attendees from as far away as Germany, Korea and France to the Santa Clara Convention Center, June 24 - 26. Billed as the Technology Summit, the conference featured keynote addresses and chat sessions by some of high-tech's most notable leaders such as Kim Polese, Esther Dyson, Ann Winblad and Judy Estrin.

More than 60 in-depth sessions and roundtables covered topics as diverse as LANs and WANs; Certification Issues; Programming for Television and Internet Hybrid Applications; Personal Stories of Successful Women; and Gaining Access to Capital.

More than 120 companies participated in the Career/Product Expo and WITI Networking Area, which featured book signings by keynote speakers, hourly prize raffles and an interactive computer session for local students.

Speaker Barbara Ferris, who led the roundtable discussion on Technology & Democracy at the conference, was impressed with her first WITI conference. "Hands down, WITI was the best conference that I have ever attended in my whole professional life," she said. "The convention center never felt crowded, the bathroom lines were never impossible, the food was plentiful and the all around ambience of WITI was powerful and empowering."

Attendee Marjan Badiei agreed. "It was a great opportunity to meet very smart and motivated women. And that alone was worth attending the conference, as it gave me more hope, drive and courage to go ahead with my dreams."



Hall of Fame Dinner Banquet: Hall of Fame inductees were, from left to right, Julie Spicer England, Eleanor Herlin and Anita Borg, shown here with WITI's Founding Executive Director Carolyn Leighton-Tal and Hall of Fame Master of Ceremonies Donna Shirley. Shirley is also a 1997 Hall of Fame Inductee. Not pictured are inductees Mildred Dresselhaus and Gertrude Elion.



Keynote Speakers Ann Winblad (left) and Kim Polese at the 1998 Technology Summit in Santa Clara.



Design Your Future - Two girls from Bay Area middle schools completed design challenges with Lego CAD Software and then built real life models using Lego DACTA simple machines.

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The potential of the cable industry is enormous. It is estimated by the NCTA that 500,000 homes will subscribe to digital cable service this year, and 2.7 million homes will subscribe next year. Although there are no figures on how much business can be expected from the commercial sector, it appears to be plenty.

Eckert envisions data sharing, conference calling, and e-mail replacing video/audio. She says businesses are going to be linked together to share instant information.

"It's going to be much like when the world got telephones and people could just pick up the phone and call someone," says Eckert. Alexander Graham Bell would be proud.

Women on the Move

By Deeanne McClain

Modem Media. Poppe Tyson, a digital marketing communications company, has recently promoted Eve Chu to managing director of account.

services for the newly formed organization in Hong Kong. She will expand her role into spearheading new business initiatives. Chu has been instrumental in developing the former Poppe Tyson's strong position in the emerging Asian interactive marketplace.

Meg Whitman has been named the new CEO of eBay, the rapidly growing online personal trading company. Whitman comes to eBay from Hasbro Inc.'s Preschool Division and is expected to lead eBay to the next level of success, building upon the company's leadership position in the one-to-one online trading market.

Alison Andrews, MicroStrategy, is the director of education services and consequently, the first female MicroStrategy to become a director. Four years ago, Andrews was given the task of creating the education department from the ground up for the decision support software vendor, and has since developed her department from a staff of one to 24, while continually boasting a 100 percent-plus annual growth rate in revenue. Under Andrews' tutelage, MicroStrategy's education services department has come to be regarded as one of the most comprehensive training programs in the technology industry.

Kimra Hawley, Input Software, Inc., has been named president and CEO, moving up the ranks from imaging marketing director and general manager of the software division of Input Software, Inc., formerly Cornerstone Imaging, Inc. Hawley has more than fifteen years of experience managing computer subsystems development and marketing teams. The company's product lines include InputAccel, an advanced client/server document capture application, and PixTools, the industry's leading scanning and image manipulation software tool.

WITI is proud to announce that **Gloria Moore**, CEO of Wilson Moore & Associates, has been named the regional director for WITI's Atlanta chapter. Moore has an executive MBA from Emory University School of Business. Her past experience includes telecommunications, television news and new media. She is also a freelance writer specializing in internet-related topics. Moore can be contacted at gmoore@witi.org.

WITI
EVENTS

by Amy Bond

The Business of Technology Conference

A Spotlight on Telecommunications
September 17 - 18, 1998
Cobb Galleria Centre - Atlanta

The second in our regional conference series, the **Business of Technology Conference** will feature keynote speakers Debra Benton, president of Benton Management Resources, Atlanta Mayor Bill Campbell, Denise Scalfini, general manager of Lucent Technologies; and Ella Williams, president and CEO of Aegis Systems.

This will be Benton's third appearance at a WITI conference this year. As president of Benton Management Resources, she travels around the world coaching managers, CEOs and presidents on executive effectiveness.

Now in his second term, Mayor Campbell has set his sights on turning Atlanta into one of America's first Smart Cities through the use of technology. He has been a forceful advocate for bridging the digital divide between rich and poor, and ensuring that all of Atlanta's children have the skills to compete in the 21st century. As chair of the United States Conference of Mayors' Transportation and Communications Committee, Campbell this year passed a resolution to establish a National Advisory Committee on Technology and Communications. To help realize his vision of the Smart City, he also appointed an Atlanta Technology Advisory Committee. He continues to work with key business leaders to market Atlanta as a technology capital.

As general manager for Lucent Technologies, Scalfini is responsible for introducing and selling



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For the latest in Internet commerce, visit the Focus on I-Commerce section on InfoWorld Electric at <http://www.infoworld.com/ecommerce>.

ANNOUNCED

US WEST ENTERPRISE NETWORKING AND CHANGE-POINT announced last week their joint offering called Invol Free Web Teaming. This service allows groups of people to use their Web browsers to work on collaborative projects. In addition, there is a personal workspace for each team member to create memos, post calendar items, make comments in discussions, and Web links, assign tasks, and take polls. The product is available now at <http://www.invol.net>. US West: <http://www.uswest.com>. ChangePoint Corp.: <http://www.changepoint.com>.

NEW EMAIL COMMUNICATIONS SYSTEMS (NECS) has announced the availability of its MailPush service. The service notifies clients on a dedicated network connection when they receive new e-mail. The MailPush system can call users on their cellular, home, or office phone to announce the receipt of e-mail, the sender's name, and the subject line. Notifications can also be sent to pagers and cell phones with text-messaging capabilities. NECS is offering the service for free to the first 24,000 U.S. users. More information is available at <http://www.mailpush.com>.

SHIPPING

SOFTARC has upgraded its FirstClass Intranet Server (FCIS), which has features that make it easier to use the Internet. Version 5.5 has support for Lightweight Directory Access Protocol and SMTP among others. The corporate edition is available now for \$995 and includes support for 10 users. The price for additional users is \$35 to \$70. SoftArc Inc.: <http://www.softarc.com>.

TALK BACK

To contact Intranets & I-Commerce section writers, send e-mail to firstname_lastname@infoworld.com.

INTRANETS & I-COMMERCE

Banks drive move to certificates

■ Technology vendors follow in effort to make authentication interoperable

By Matthew Nelson
DIGITAL CERTIFICATES and the public key infrastructure (PKI) technology are going mainstream in a pilot program conducted by several large banks.

Companies use digital certificates to authenticate users electronically.

Several financial institutions and technology companies are conducting the experimental pilot, which is called the National Automated Clearing House Association's Certification Authority Interoperability Pilot, to test the interoperability of their digital certificates. Participants include Bank of America, Citibank, Mellon Bank, Zion's Bank, VeriSign, Entrust Technologies, GTE Cybertrust, and CertCo.

Each bank has issued digital certificates to specific merchants that allow the merchants to set up direct debit accounts in which recurring bills are directly deducted from their accounts.

The group used the Online Certificate Status Protocol (OCSP), which is under consideration by the Internet Engineering Task Force, to conduct real-time certificate status checking.

Analysts believe OCSP, although not as important for intranets, is essential for financial institutions.

"If you are doing major trades and somebody gets fired at 9:00 in the morning, you want to make sure that at 10:00 in the morning they are not doing major trades for

the company," said Ted Julian, an analyst at Forrester Research, in Cambridge, Mass.

Although financial institutions and technology vendors were quick to point out the healthy collaboration among the companies, Julian said he believes this is a pure case of customers forcing vendors to provide interoperable products.

"Here we're seeing banks absolutely needing that interoperability so they are just going to make it happen," Julian said. "They accelerate the time frame, because they are not waiting for [the vendors] to get around to it."

VeriSign has also approached several U.S. government agencies that are conducting PKI pilots to enforce security in their systems, and is working with 13 agencies in ongoing pilots, said Anil Pereira, director of corporate marketing at VeriSign.

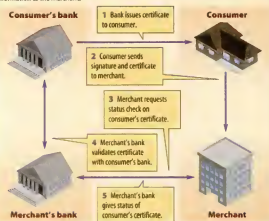
One quasigovernmental agency is also involved in a digital certificate pilot is the U.S. Postal Service. Cylink has provided the post office with a large-scale PKI system.

This is the postal service's way of getting into the business of certifying documents, attachments and e-mail... electronic information that you want to have certified and protected and secure," said Andrew Morbitzer, director of market development at Cylink.

VeriSign Inc., in Mountain View, Calif., is at <http://www.verisign.com>. Cylink Corp., in Sunnyvale, Calif., is at <http://www.cylink.com>.

The digital certificate interoperability system

Using the Online Certificate Status Protocol to check a digital certificate in real time, both banks verify the certificate's authenticity and the merchant's bank approves or rejects the certificate information to the merchant.



SOURCE: NATIONAL AUTOMATED CLEARING HOUSE ASSOCIATION

Universal messaging

Sun and Lucent put voice, e-mail, and fax in one inbox

By Torsten Busse
SUN MICROSYSTEMS and Lucent Technologies will pool their resources to offer a unified messaging system that will allow service providers to offer integrated voice, e-mail, and fax messaging services to individuals and corporations.

The move builds on a global alliance that was announced in June under which Sun and Lucent both promised to provide prepackaged networking products and services that are targeted at Internet service providers and telecommunications companies. The services promised in June will enable ISPs to offer applications and services.

As part of the plan, Sun and Lucent in the first quarter of 1999 will start to join sales and marketing campaigns for a messaging system that integrates Sun's Solaris Unix operating system and Internet Mail Server with Lucent's Octel Messaging system and text-to-speech conversion technology from Bell Labs.

The messaging system will come with tools allowing ISPs and other service providers to develop custom messaging applications which pro-

vide users with one message inbox, combining fax, voice and e-mail messages that can be accessed using a variety of devices and access methods including telephones, PCs, or information devices.

"Our service-provider customers don't want us to create the end-user applications, but they need a framework to customize the applications and offer them under their own branding," said Marty Parker, vice president of strategy and business development at Lucent's Octel Messaging Division, in Milpitas, Calif.

The messaging platform will incorporate Lucent's text-to-speech and speech-to-text conversion technology. The system will also offer capabilities such as "word spotting" for routing and sorting faxes and text messages.

Sun Microsystems Inc., in Palo Alto, Calif., is at <http://www.sun.com>. Lucent Technologies Inc., in Murray Hill, N.J., is at <http://www.lucent.com>.

Torsten Busse is a San Francisco correspondent for the IDG News Service, an InfoWorld affiliate.

THE WEB HOTLIST

Web sites worth checking out

- Baan** <http://www.baan.com>
Enterprise software vendor Baan promotes its extensive range of products on this highly informative site. The Industry Solutions features an impressive array of case studies, white papers, and fact sheets.
- Bright Light Technologies** <http://www.brightlight.com>
Information on software products that combat unsolicited e-mail is offered on Bright Light Technologies' site. Access the Spam Report for data on the volume of Internet spam, or use the Spam Calculator to estimate the cost of spam per user.
- Rights Exchange** <http://www.rightsxcchange.com>
Internet-commerce services for managing digital property rights and business models are featured on the Rights Exchange site. The What Is Digital Commerce? section has information on i-commerce and links to useful Web sites.

Send your URL suggestions to jim_batthey@infoworld.com.

DCDs to help in building three-tier Web XML apps

By Jeff Walsh

MICROSOFT and IBM have submitted a proposal to the World Wide Web Consortium (W3C) for describing the structure and content of Extensible Markup Language (XML) data.

The submission of Document Content Descriptions (DCDs) was acknowledged by the W3C, which will next form a working group to flesh out the protocol.

DCDs provide similar functionality to Document Type Definitions (DTDs), which the XML world initially inherited from its Standard Generalized Markup Language roots.

But DCDs further support other XML-friendly standards such as

Resource Description Framework, XML-Data and XML Namespaces. (See chart, below.)

DCDs are also written in an XML syntax, unlike DTDs. This enables a common markup language for both the DCD and the XML schema it represents, but also the same parser can be used for both the DCD and the XML data.

According to Microsoft, DCDs will be necessary for any developers looking to build three-tier Web applications using XML.

"There are some things you'll need that a DCD provides that a DTD does not," said David Wascha, product manager for platform marketing at Microsoft.

Wascha noted that DCDs have

support for database and programming style prototypes. For example, in a DCD, a number can be designated as an integer ("int" in programming talk) in the schema, which is not possible to do in a DTD.

"You can call something an int and then send it to an equation, whereas DTDs allow you to do very generic description of a document," Wascha said.

Neither Microsoft nor DCD co-author Tim Bray would go so far as to say that DCD would supplant DTDs.

"DCD is an alternative to DTD. It depends on what you're going to use it for," Wascha said.

Bray, an independent consultant, said DCDs do provide a superset of the functions of DTDs, but it is too soon to announce DTD's death.

"Given the velocity and turmoil of events in this particular industry and standards arena, anyone who ventured a strong answer either way to that question would have rocks in their head," Bray said.

Microsoft Corp., in Redmond, Wash., can be reached at (425) 882-8080 or <http://www.microsoft.com>. IBM, in Armonk, N.Y., can be reached at (914) 765-1900 or <http://www.ibm.com>.

Online forms may be binding

By Jessica Davis

UWI.COM has announced the Extensible Forms Description Language (XFDL), a new language that will make it possible to create, view, and fill in complex business forms and legal contracts on the Internet and intranets.

XFDL, an offspring of the Extensible Markup Language (XML), and UWI.com's proprietary universal forms description language, was created with the help of the World Wide Web Consortium's (W3C) XML co-editor, Tim Bray, who worked as a consultant for UWI.com.

The new language, expected to be approved by the W3C standards body once the draft is completed on Tuesday, offers the capability of viewing forms with any browser, rather than a proprietary client.

For the first time, it will bring forms processing to Internet-commerce applications using an open protocol. In addition, those forms can be regenerated at a later date to verify their accuracy, which is a critical development in the drive to allow electronic forms to replace paper forms as legally binding documents. This in turn will also allow companies to reduce their dependency on imaging applications, using largely to store electronic representations of paper forms.

Bray has talked informally with bigger companies that use workflow in their suites, such as Netscape about incorporating XFDL technology. However, no formal talks have yet been held.

UWI.com, in Victoria, British Columbia, can be reached at <http://www.uwi.com>.

Working through the W3C

In addition to Document Content Descriptions, several other Extensible Markup Language (XML)-based technologies for Web publishing and applications are working their way through the World Wide Web Consortium (W3C). Here are the major proposals, what they do, and where they are in the W3C process.

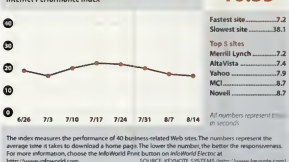
Document Object Model	Allows programs and scripts to dynamically access and update the content, structure, and style of documents	Working draft
Extensible Style Language	Adds style such as fonts and color to XML documents; also links XML data to HTML presentation	Working draft
Resource Description Framework	Provides an infrastructure to support meta data across Web-based activities	Working draft
XML Data	Standardizes schemas to define the characteristics of classes of objects	Acknowledged submission
XML Linking Language	Describes unidirectional and multidirectional links between objects using XML syntax	Working draft
XML Namespaces	Qualifies tag names used in XML documents by associating them with their source	Working draft
XML Pointer Language	Enables addressing into the internal structures of XML documents	Working draft

KEYNOTE BUSINESS 40

Internet Performance Index

Week ending Aug. 14

16.35



NET PROPHET · DYLAN TWENEY

Real estate site aims to make a home sweet home on the Internet

HANS KOCH IS EITHER the bravest or the most foolhardy of Internet-commerce entrepreneurs. He's competing against not only Microsoft, but real estate agents nationwide.

It's hard to imagine a more entrenched set of competitors. But Koch's Able Owners' Network site (<http://www.owners.com>) stands a good chance against them, because Koch is offering his customers a chance to make as much as 6 percent more when they sell their homes.

That's the commission that real estate brokers charge when they help you sell your home. If you sell it yourself (which is what Owners.com aims to help you do), you pocket the difference. On a transaction that

amounts to hundreds of thousands of dollars, 6 percent is no chump change.

One of the big disadvantages of traditional "for sale by owner" home sales is that, without a broker, your house doesn't get listed in the exclusive property database used by all the real estate agents in your area. This multiple listing service, or MLS, contains information on all the houses for sale in a particular area, along with details about each house, asking price, and pictures.

The MLS is a staple of modern real estate — it's a storehouse of inside information that gives real estate agents an advantage over ordinary people and makes these agents worth hiring. Selling your house yourself keeps you out of the local MLS and cuts down dramatically on the number and quality of prospective buyers.

What Koch's site does is offer a public property database on the Internet, thus making an end-run around the MLS cartels. Owners.com's database is free for anyone to browse, and anyone can place his or her own for-sale listing in the database. A listing without pic-

tures is free, and Owners.com charges \$65 to \$115 for packages that include online pictures and physical yard signs.

This year, Owners.com will list about 200,000 properties — a relatively small number. Koch's success hinges on whether he can grow that number while increasing traffic to his site through partnerships and aggressive marketing. Like many I-commerce ventures, Owners.com needs to reach a critical mass of customers and site visitors before it begins to exert "gravitational pull," and attract customers on its reputation alone.

Meanwhile, Koch faces a host of competitors. Most are aligned with realtors, rather than consumers. The competitor with the deepest pockets is undoubtedly Microsoft, whose recently launched HomeAdvisor (<http://homeadvisor.msn.com>) seeks to be a one-stop source for everything related to home sales.

HomeAdvisor is a remarkably well-designed, well-organized site, and it provides a wealth of information for prospective buyers,

including financing information, local home sale information, and general guides for getting started and understanding the language of real estate. HomeAdvisor, like most online real estate ventures, is working in close cooperation with real estate agents — it's not trying to use the Internet to sell homes in a new way. Instead, HomeAdvisor's listings come straight from MLSes, and prospective buyers are referred to brokers when they find a house they're interested in.

Microsoft is taking the safe route in this market — and, given the heat that Koch has taken from realtors, that may be a smart move on Microsoft's part. But Koch still has that 6 percent advantage, and, over time, that will draw customers to his site. The efficiencies of the Internet make it certain that someday, someone — maybe Owners.com — will make a successful end-run around the brokers, or force brokers to reduce their commissions.

Dylan Tweney (dylan@infoworld.com) has been covering the Internet since 1993. He edits InfoWorld's Intranet and Internet-commerce product reviews.

FOCUS ON I-COMMERCE

■ Dell offers credit card protection

Dell is now offering U.S. customers who shop at its Web site extra protection against credit card theft, misuse, and fraud.

Under its Online Secure Shopping Guarantee, information submitted by customers at <http://www.dell.com> will be encrypted, the company said Thursday. The company also has a new policy to reimburse customers for credit card company liability charges as much as \$50 whenever fraudulent charges occur from an online purchase at Dell's Web site.

Dell sells about \$6 million in products each day over the Internet.

— Nancy Weil, IDG News Service (an InfoWorld affiliate), Boston

■ Smart cards and Big Macs

At 870 McDonald's restaurants across Germany, the familiar clink of the cash register will soon be replaced. In part, by a payment system that allows customers to pay for goods using stored-value smart cards. Hewlett-Packard's VeriFone unit announced this month that it will provide the smart card payment terminals.

Smart cards look similar to credit cards, but they include a microprocessor and the capability to store data. Stored-value smart cards are most often used to store electronic cash that can in turn be used to purchase low-value items, such as bus tickets, newspapers, and food. Smart cards eliminate the need for the merchant to communicate with the bank for authorization of purchases.

— Kristi Kozick, IDG News Service (an InfoWorld affiliate), Paris

■ Talk to us

Questions, comments, kudos? Send a message to the section's reviews editor at dylan@infoworld.com. To reach a staff author use this format: first_name_last_name@infoworld.com.

SITE PROFILE <http://www.cisco.com>

COMPANY Cisco Systems Inc., San Jose, Calif.
CONTENT Networking products and services
WEB REVENUES Currently estimated at \$15.8 million per day, with a \$9 billion annual run rate projected by the end of July 1999. **Web site-driven commerce accounts for approximately 80 percent of Cisco's overall revenues.**

TRAFFIC As many as 1 million page views per day; 170,000 registered users; 1.27 million log-ins per month from registered users.

WEB EMPLOYEES Approximately 125 dedicated to the Web site.

TOOLS USED Sun Enterprise server hardware; Cisco routers, switches, and hubs; Netscape Enterprise Server (internal); Apache Web server (external); BroadVision One to One application system; Oracle enterprise resource planning software system; Site design: C++ and Perl scripts, migrating to Java/CORBA.

QUOTE *Joe Stearns, senior IS manager of Internet commerce* "The main goals of Cisco Connection Online are to increase our customer base, provide optimal customer support, and satisfy our customers by providing a convenient platform that meets their business needs."

— Jim Battery

► Intranet reporting tool

Web gets cosmic boost

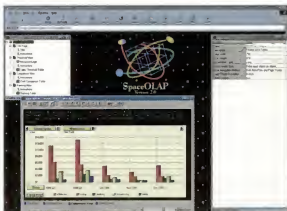
■ All-Java SpaceOLAP brings real power to the browser

By Robert A. DelRossi

ONLINE analytical processing, or OLAP, tools aren't particularly revolutionary any more. But with InfoSpace's SpaceOLAP comes the arrival of a thin-client, browser-based, pure-Java OLAP tool. That sounds like a lot of buzzwords for one product, yet it's an accurate description of SpaceOLAP, which provides real OLAP power to corporate users across an intranet or standard Web browser.

What makes SpaceOLAP really interesting is that, unlike competitors, SpaceOLAP delivers its power through a Java-capable Web browser, such as Microsoft Internet Explorer or Netscape Navigator. Each of its modules is coded in pure Java, which makes them wonderfully portable but also a bit sluggish, even on a 200-MHz Pentium PC.

On the other hand, a big advantage of the all-Java approach is that it's possible for users throughout an organization to access information right from within their Web browser. Because the Java applets that make up the program are stored on the server, administrators do not need to update anything on individual users' computers. The applets are downloaded to the browser as necessary, and there are no DLLs or plug-ins to deploy.



SPACEOLAP'S DESIGNER lets you create multipage presentations that incorporate tubular data as well as a rich variety of graphs.

SpaceOLAP is divided into three modules. Once you're connected to a database, you can create OLAP presentations with the designer tools. A separate run-time application is provided so that other users can view and experiment with the presentations you have made. A third application, the SpaceOLAP Administrator, lets you create user accounts, organize users into groups, and assign access passwords. The tools in the designer are well-conceived and make it fairly simple to quickly construct attractive, interactive presentations.

For any OLAP solution to work, you need a database back end that supports the creation of multidimensional data sources, called cubes. SpaceOLAP can work with a variety of databases including Arbor Esbase, IBM DB2 OLAP Server, and Oracle Express. The InfoSpace Enterprise Server, a Java program that installs on your Web server, mediates the connection between the database server and the user's browser. InfoSpace also offers servers for HP-UX, IBM AIX, Sun Solaris, and Microsoft Windows NT.

► **SPACE** page 53

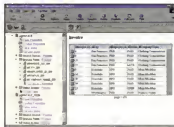
► Web database publishing software

Net.db hampered by instability

By Moggie Biggs

CODE-FREE database-to-Web tools hold a lot of promise for content creators working under tight deadlines. As these products go, Centura Software's Net.db 1.1 does have the tools needed to quickly create Web applications that include relational data. However, IT managers considering these types of tools would do well to hold off on evaluating Net.db; this version does seem problematic and disorganized.

If Centura can resolve the issues in this release, it stands a good chance of meeting or even beating rivals, such as Elemental Software's Drumbeat. One real plus for Centura is that Net.db works with any CGI-compliant Web server; Ele-



NET.DB's designer preview capabilities show how the completed pages will appear.

mental Software's Drumbeat is reliant on Microsoft's Active Server Page technology.

Centura does provide a database with Net.db, called SQLBase, as well as ODBC support for only Oracle and Microsoft's Access. Rival

products already support ODBC as a mechanism to link any compliant data source to the Web. Centura expects to offer expanded ODBC support in an upcoming release.

Like its rival's products, Centura's gives creators a good number of wizards that make the process of getting data to the Web a breeze. Developers can also externally customize Web applications created with Net.db if needed.

My copy of Net.db exhibited some strange behavior during my tests and showed some disorganization that could be improved. In some instances, Net.db displayed a prompt after installation that indicated a need to reboot; during other installations the product indicated that it did not require a

► **NET.DB** page 53

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Space

Continued from page 51

SpaceOLAP handily meets the criteria for solid OLAP tools. OLAP tools offer users an intuitive way to examine the summarized multiple dimensions of a given data set in an effort to answer common business questions. For example, OLAP programs such as Cognos' PowerPlay and Seagate Software's Crystal Info let you plot the data into pivot tables with different dimensions on each axis. "Drilling down" is a common operation in which summarized data is broken into its constituent parts, as when a user drills down on quarterly sales to see the monthly sales for that quarter. In addition to presenting tabular data, OLAP tools typically let you view information in graphs as well.

The biggest impediments to SpaceOLAP are that it carries a high price tag and its performance is sluggish even on fast PCs. Nevertheless, SpaceOLAP is an interesting product with a great deal of potential for making OLAP commonplace



SpaceOLAP

This intranet tool has the potential to distribute online analytical processing (OLAP) capabilities companywide. Its solid OLAP power and unique all-Java deployment approach are an appealing combination.

- **Pros:** Solid OLAP capabilities; easy deployment.
- **Cons:** Performance can be sluggish; no built-in printing capability.
- **InfoSpace Inc.,** San Mateo, Calif.; (888) 463-6772 (toll-free); <http://www.infospace-inc.com>.
- **Price:** \$25,000 per server; \$2,000 per concurrent user.
- **Platforms:** Microsoft Internet Explorer 3.02 and later; Netscape Navigator 3.0 and later.

throughout an organization.

Robert A. DeRossi is a frequent contributor to InfoWorld. He can be reached at rd@turbopower.com.

Net.db

Continued from page 51

reboot.

The installation process also contained numerous prompts for various components that lengthened the effort significantly. I prefer a few dialogs upfront prompting me for the required information for all components, followed by an automated install routine.

Net.db's Page Designer was buried in a Getting Started Web page; I would have preferred to see the Page Designer and the Page Viewer tool as direct selections after installation. In general, Net.db components, although useful tools, are rather thrown together and unorganized, which could lead to confusion for the less adventuresome.

Centura officials acknowledged problems with the current installation process. They are working on revamping it for the next release.

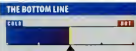
Centura's Net.db also displayed some unusual quirks as I was building my test applications. In some cases, Net.db worked well and

I was able to connect to SQLBase, creating applications using the wizards and externally customizing the applications. At other times, Net.db seemed to go into hang conditions or cause the machines to crash. At times screen refreshes during the saving of applications seemed inconsistent. Also, the connections to my Oracle and SQL Server data sources seemed to work only intermittently.

I was able to create and publish some of my test applications. The AutoAuthor, Page Wizard, and Chart Wizard were particularly helpful in speeding me along. I also liked the tutorial samples included.

Centura needs to buttress Net.db's lengthy installation, lack of organization, and inconsistent behavior before it can become a viable solution. Those seeking a database-to-Web tool should evaluate Net.db with an eye toward considering implementation of future releases.

Senior Analyst Maggie Biggs (maggie_biggs@infoworld.com) evaluates database products and application development technology for the InfoWorld Test Center.



Net.db 1.1

This Web-authoring tool promises quick, codeless creation of Web database applications, but shows instability and a lack of organization.

- **Pros:** Works with CGI-compliant Web servers; offers wizards for fast creation; developers can customize applications; includes SQLBase database.
- **Cons:** Inconsistent behavior; intermittent crashes; screen refresh problems; difficulty connecting to data sources other than SQLBase.
- **Centura Software Corp.,** Redwood Shores, Calif.; (800) 444-8782; <http://www.centurasoft.com>.
- **Price:** \$395 for a two-user development license; \$1,999 for a 25-user concurrent license.
- **Platforms:** Development: Windows 9x and Windows NT Server; Windows NT 4.0 Server with any CGI-compliant Web server. Client: any frames-capable Web browser that supports JavaScript.

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Pyramid schemes seem to generate a lot of spam, and there is little enforcement

Have I got a deal for you. You just sit back and watch the money roll in. All you have to do is pass this wonderful idea on to a few hundred thousand of your closest friends

You would think that no one from here to Albania could be fooled anymore by a blatant pyramid scheme. After all, we all

know you don't get something for nothing, right? And yet, if it weren't for the apparent success of spam-promoted pyramid schemes on the Internet, the junk e-mail problem would be far less severe than it is. In many ways junk e-mail is itself one huge pyramid scheme, because the "product" being sold by spam so often is in fact spam: bulk e-mail, e-mail address lists, or how-to-get-rich-by-spamming instructions.

There are laws against pyramid schemes, of course, but only a relative handful of the perpetrators of such scams on the Internet have actually felt the hot breath of the Federal Trade Commission or other enforcement agencies. And, as we saw last week, with Congress seemingly about to provide unsolicited commercial e-mail with some legal standing, one has to wonder if even that low-level deterrence will disappear. So I think it's important that we look a little more closely at these spam-based pyramid schemes function.

I continue to encourage *InfoWorld* readers to forward to me (at gripe@infoworld.com) the junk e-mail they or their companies receive. In recent months several readers have pointed out that many of the messages they received encouraged recipients to call the same phone number (800) 811-2141. In searching my database of forwarded spam, I found that many other readers have also received dozens or even hundreds of messages promoting that same phone number, making its promoters a major source of junk e-mail.

The suspiciously similar messages all encouraged recipients to call and sign up for a lucrative "home business opportunity." All you have to do after paying the \$200 membership fee is "advertise" the 800 number to others, and you get half the proceeds when those you have contacted sign up as well. Some—but not all—of the messages mentioned that signing up also provides members with discounts on products they can purchase through the service.

After making a half dozen phone calls to the company's "friendly telemarketers" to request

more information, I knew only a little more about the operation than I did from the junk e-mail. Explanations of how the product discounts worked were minimal and vague—the emphasis was on how you would make money by getting others to become members. The telemarketers didn't specifically recommend using bulk e-mail, but they did not discourage it either.

When I identified myself as a journalist, my requests to speak to a representative of the company about its business practices went unanswered.

Is this a pyramid scheme? From what I could gather without signing up, it certainly appears to be. But I have no way of knowing if there is any actual value in their product discounts, or whether customers really do make "commissions" by luring others to sign up. And I don't know whether the company itself is generating any of the bulk e-mail promoting its 800 number or if it's all being done by customers trying to sucker in others.

What I do know is that a lot of *InfoWorld* readers are getting a lot of junk e-mail because of this company. And it is interesting to contemplate how the spam bill making its way through Congress would affect this kind of operation. The bill wouldn't hurt them if someone proves they are a pyramid scheme, because laws against that are already on the books. And it might help them: Their willingness to provide a real phone number would give the e-mail some claim to being legal under the proposed law's requirements for valid contact information.

That's why I say it's hard to see how such a law will do anything but help the spammers. But the junk e-mail from *InfoWorld*'s readers contains far more direct evidence for what the law before Congress would mean, and we'll examine it next week.

Ed Foster has been writing about technology and consumer issues for nearly 20 years.

Send him gripes about computer companies and products at gripe@infoworld.com, or visit his *Gripe Vine* Forum on *InfoWorld* Electronic (<http://www.infoworld.com>).

TO THE EDITOR

THIS WEEK'S LETTERS touch upon myriad topics: recruiting practices, Bob Metcalfe's theory of anticapitalism, Oracle support problems, and hybrid architectures. A senior analyst from the ICISA took offense to a recent *Test Center Comparison*, saying that *InfoWorld* misrepresented the company's objectives.

Poor recruiting practices

I ENJOYED Paula Jacobs' article on recruiting, [see "Working with recruiters," Aug. 10, page 95]. I've had both good and bad experiences with recruiters. The following are some poor recruiting practices that turn me off to a recruiter and the firm for which he or she works. These practices usually occur during the initial screening process. Recruiters should realize that they, themselves, are also being interviewed.

Poor recruiting practices:

- Asking a recruit his or her bill rate within the first 3 minutes of the initial interview.
- Not becoming familiar with the recruit's résumé before speaking with him or her.
- Behaving like I (900) sex operator. You'd be surprised how many firms hire sexy sounding marketing types to try to lure potential consultants. Sex doesn't necessarily sell when recruiting IT professionals—technical opportunity and financial rewards sell.
- Being technically clueless. There's nothing fun about having to explain to a recruiter the difference between a Visual Basic database developer and a Lotus Notes Developer. I don't want to spend my time educating recruiters. Know your business.
- Badgering potential recruits, especially at home, to accept a position. If a consultant goes on an interview and decides not to accept the offer, live with it.
- Telling the client that the consultant being recruited is an employee of the recruiter's firm when he or she isn't.
- Not being professional. Don't act like a used-car salesman.

Recruiters should know their business, the IT market, and most importantly, take the time to know the consultant. All the rest is dressing.

Ray Fernandez
Consultant
Lucent Technologies
Elizabeth, N.J.
fernandez@lucent.com

Making anticapitalism work

IT IS EASY to see how Bob Metcalfe's "Anticapitalism" would work in some cases. [See From the Ether, Aug. 10, page 11.]

Web servers could add two attributes in every <a> and tag: "size=" , which would give the size in bytes of the object referred to; and "hits=" , which would tell how many hits the object has had so far. With these two pieces of information, the browser could make a probabilistic, cost-conscious decision as to which objects to begin pre-loading. The server, too, could begin preparing to serve anticipated objects.

Carrying this idea into the bigger picture, compilers need to begin building into every piece of executable code the ability to track history. Without requiring the programmer to accommodate such tracking, the compiler should include logic to maintain long-term audit data. Like the above example from the Web, this data would consist of hits and sizes.

Every trip down a certain path of logic in a program would be a "hit" for that path. The CPU and memory resources required to execute the logic would be its "size."

Using this technique of gauging likelihood and expense, our programs could guess where we're likely to go, and in what order logic paths should be pre-executed during otherwise idle CPU time.

Jonathan Meraz
Systems analyst
ATC Information Services,
Oklahoma City

Oracle's support woes

I JUST FINISHED reading Ed Foster's article on Oracle's support woes and I lost count of how many times I smiled and nodded my head. [See The Gripe Line, Aug. 3, page 54.]

As an Oracle database administrator for the past five years, I've endured much at the hands of Oracle's support technicians. It's really a Vegas crap shoot when you call Oracle for help because you never know if you'll get someone who is really good and knows their stuff or someone who speaks English as their fifth language and just started last week.

Compounding Oracle's regular support headaches is that the core software has gotten incredibly buggy over the last few years. Finding all of these new "features" is an adventure.

COMPILERS NEED TO BEGIN BUILDING IN EVERY PIECE OF EXECUTABLE CODE THE ABILITY TO TRACK HISTORY.

Jonathan Meraz

In just one install of Oracle's financial software, I logged 14 (trouble reports) with support regarding found bugs in its software.

Perhaps I'm old fashioned, but that is not acceptable, especially when you see the sticker price on Oracle's offerings. When you see such problem software, you almost feel sorry for Oracle's support personnel. Almost.

Robin Schumacher
Robin.Schumacher@tecony.com

Anti-virus dispute

I WOULD LIKE to comment on the recent article produced by the *InfoWorld* Test Center. [See "Eradicate deadly viruses," Aug. 10, page 66.]

In the Testing Methodology section on page 78, Stuart McClure states that "ICISA certifies anti-virus products to make a product." This is absurd. Yes, we do charge vendors a fee for testing; however, our goal is to verify the claims of AV products to protect end users and not a get-rich scheme, as the author implied. The ICISA Certified Logo on the box ensures the user that the product indeed will give a certain level of protection. That protection is against 100 percent of the wild viruses and 90 percent of our Zoo Test sets, as the sidebar on page 74 explains.

I'd also like to address the quote, "Because we were unable to obtain exact testing methodologies from ICISA without paying a fee." I'd like to point out that *InfoWorld* did

not approach ICSA for its methodology, it approached ICSA looking for viruses. Our methodology is posted on our site free for anyone to view. The "Certification Testing Scheme" URL is even listed in the side bar on Page 74.

ICSA will under no circumstances distribute viruses to anyone who is not a member of ICSA's AVPD (Antivirus Product Developer) group. This policy protects ICSA's reputation, as well as uncontrolled distribution of ICSA's virus collection.

We understand that this makes it difficult for testers such as *InfoWorld*. Depending on the time frame and situation, ICSA will offer to run the virus-related tests (for a fee) in-house, or send a lab technician to a facility with the collection and oversee the tests (also for a fee). In our view this is not an unreasonable situation.

In my opinion, McClure used ICSA's logo like we have a "you-gotta-pay-to-play" policy, which is simply not true.

Jonathan P. Wheat
Senior analyst
ICSA
Malicious Code Laboratory
Carlisle, Pa.

I believe the ICSA adds much to the security field, but by charging vendors a fee for certifying antivirus products, the ICSA eliminates itself as an objective and independent third-party testing agency. If the ICSA's goal was to provide an objective certification procedure, it would offer the testing for free.

—Stuart McClure

Hybrid architectures work best

I DON'T BELIEVE that there are just two approaches to architecture: mainframe and client-server. (See From the News Desk, Aug. 10, page 5.)

Any pure approach to anything has more problems than a methodically crafted hybrid one. It makes more sense to construct an architecture where we locate resources most effectively depending on the particular, individual needs of each enterprise and each individual business function.

To extrapolate this concept, no one software or hardware company has the best solutions. As users, we must work toward interoperability and buy those systems that work well together from companies that support and contribute to broad, open system standards.

Bruce E. Hogman
Miramar, Fla.

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FROM THE EDITOR IN CHIEF • SANDY REED

The search for Computing in America is beginning to resemble a soap opera

I hadn't paid much attention to the world of infomercials until *InfoWorld*'s good name was dragged into the mud by a company that made lofty — and misleading — claims about a television series called *Computing in America*. As I noted last week, the company behind the series, Industry Communica-

tion Television (ICTV), falsely listed me on a board of advisers posted on its Web site.

Until I started looking into ICTV, I wasn't aware that there is an entire industry of companies trying to persuade technology vendors to participate in infomercials. But most of those companies actually produce the infomercials and then broadcast them in the middle of the night on obscure networks that sell paid programming time. ICTV never produced the promised "national Public Television Signature Series *Computing in America*," but it did collect a "scheduling fee" of nearly \$33,000 from some vendors.

I'm still trying to determine whether the alleged hosts of the series, first TV talk show's Dick Cavett and then actor David Hartman, participated willfully or if they, like me and the editors of other publications, were duped. Additionally, I've talked with a reporter at a New York newspaper who is working on an article about the newest incarnation of the people behind ICTV.

I feel like I'm in the middle of a soap opera. Come back next week for more.

Spotlight on technology

This week's issue includes our first Tech Spotlight, a new type of article from the *InfoWorld* Test Center. Tech Spotlights are designed to provide insight into cutting-edge technologies.

The first, which starts on page 61, covers IPv6, the next-generation networking protocol. Its author is Brooks Talley, the Test Center's test manager and one of our many technical experts.

Tech Spotlights will provide a strategic view of significant emerging technologies that we can't yet review in the traditional sense or put through the rigors of testing.

To suggest topics for Tech Spotlights, contact Comparisons Editor Siboban Santinelli at siboban_santinelli@infoworld.com. To share your thoughts about this week's article on IPv6, send e-mail to Talley at brooks_talley@infoworld.com.

Editor in Chief Sandy Reed has been following the high-tech industry as a journalist for 15 years. Send comments to sandy_reed@infoworld.com.



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ERP & SERVICES BRIEFS

■ AutoTester set to examine ASAP

AutoTester (<http://www.autotester.com>) is building on its testing tools for SAP's R/3 suite of enterprise resource planning (ERP) software by announcing a new quality-assurance suite for the Accelerated SAP (ASAP) fast-implementation package.

The Accelerated Quality Suite 4.0, available this week, includes updated versions of AutoTester's functional, unit, integration, and regression testing tools; Virtual DirectTest software, which simulates thousands of users; and AutoAdviser software, a test planning, management, and analysis tool. Officials said the package was requested by customers who wanted help keeping the complex SAP suite running. Versions for other ERP suites, such as Baan and Oracle, are in the works.

■ Oblix to streamline HR services

Every company keeps records of its employees' names, phone numbers, passwords, mail stops, system privileges, equipment checked out, position, and more — but not in the same place. Oblix (<http://www.oblix.com>) hopes to simplify human resources and other intra-company services with



OBLIX CORPORATE DIRECTORY leverages LDAP to consolidate HR and corporate data.

two new Web-based applications that leverage the Lightweight Directory Access Protocol in a customer's existing network directory.

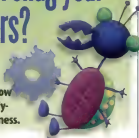
The Oblix Corporate Directory creates a filing system of "digital personas," showing all the relevant information about each employee and eliminating redundant data entry. The Corporate Service Center gives role-based access to this data, issuing calls to add or delete information and physical resources, such as phones, and updating relevant databases and applications.

FEATURE

Will Y2K snag your suppliers?

Companies struggle with how to ensure supply-chain Y2K readiness.

See page 59.



Nice guys can finish first

■ PeopleSoft's David Duffield is chivalrous about competing with SAP

Continued from page 1

The popular conception of PeopleSoft is human resources-centric, but you've moved into manufacturing and finance. How is that pushing going? From our statistics, it's going pretty good. We earned a good reputation in HR. We were very focused on the customer. We had the happiest customers out there. And just for that reputation for innovation and technology, and delivering good products, people would say — "look, just give them a chance." And they did. And now we sell more financial software, I believe, than anyone in the [United States]. More than Oracle. I believe more than SAP. And now we're moving into manufacturing — first the distribution product line, with purchasing order management — and that's going gangbusters too.

So when you get into an account like that and people start comparing you to SAP, what do you think are PeopleSoft's strengths?

Frankly, we're very pleased to be in the running with SAP. I'm one of their biggest supporters. They're a very good company [and] have very good products. We're gaining on them. And I think we both respect each other as the competition. But when the dust settles and a customer is going to pick either SAP or ourselves, if they want current 100 percent global functionality with a tightly integrated system, they're going to pick SAP. If they want a long-term relationship, one that is founded on trust and caring [and a company] easy to do business with, [and if they] believe in our product and technology vision, they will pick us. We also have some

[terrific] technology in the HR and accounting areas, the maturest of products.

No one company — [not] ourselves, [not] SAP — can do everything. We want to really focus in on what we think we do very well, and that is the core applications for our customers. [For example,] we are dominating higher education today. We acquired a company called Intrepid for the retail industry [and] a company called Tri-Mark for the life insurance industry. And you'll be seeing more acquisitions



[from us] as time goes on.

What other areas do you think that you're going to need to fill out and what else may you do in the acquisition area?

Core applications for the industries that we've targeted — financial services being one. You'll see more acquisitions and tight partnering with regard to property and casualty, insurance, the banking industry, brokerage firms.

Are we going to see more verticalization from PeopleSoft?

Yes. And we want to broaden our product line, meaning move into more countries, add the important features and functions that we don't yet have, while also deepening our focus within any particular industry, like in the federal government, retail, and financial services.

Are you fairly agnostic

about whether you buy or build technology?

We have these big product matrices of the industry, and we're going to identify the top priority items for each. And [then] we're going after either acquisitions or partners or developing ourselves. The first priority would be to develop ourselves. If time to market is not a big issue, if we can do it within the time frame we want, we'll develop it internally. If we can't, then we have to look for a partner or a potential acquisition. If the partner we see presents the best solution and has no interest in being acquired, we'll then form a partnership and they can remain independent.

Is there a threshold, from a dollar perspective, in your mind as to what kind of acquisitions you will do?

Yeah, our biggest one was Red Pepper — it was about \$250 million. We probably won't do more than that. We're very open to a merger of equals. We wouldn't think about merging with companies like Baan or J.D. Edwards.

How about somebody like Vantive. There have been rumors.

Possible. Siebel is another good company.

One of the requirements we hear customers talking about is that, while there are some customers that are lining up behind all SAP or all PeopleSoft, it seems that the majority are going

DAVE DUFFIELD PeopleSoft Inc.

EXECUTIVE CLOSE UP

■ Age: 57

■ Title: President, CEO

■ Salary: \$242,000

■ Biggest success:

Founded PeopleSoft after leaving Integral Systems (another company he founded) when it wouldn't adopt human resources applications to PC systems

■ Key challenges:

Powerful competitor in SAP; relative late-comer in offering full enterprise resource planning suite

■ Personal note:

Known as one of the nicest CEOs in the software business

to wind up integrating them. Is PeopleSoft going to line up behind Business API? Or is Extensible Markup Language something you are looking at?

I will tell you that over a period of three years, you will find that SAP and PeopleSoft and others who move toward a message-based architecture will easily integrate much more so than they do today.

Does PeopleSoft need to develop their own messaging software?

You have to architect your system to use a messaging architecture. We will begin to build our own middleware, like Open Horizon or Marimba. We use very good stuff, like we have with BEA. We will build the applications that best exploit the messaging architecture. You just can't take a typical client/server program, and all of a sudden it's message-based. There's some rework that has to be done to effectively use messaging.

So, we can expect that the next major revision of PeopleSoft applications will be much more messaging-centric?

It's been going that way for the last three years. We're moving more and more in that direction. The use of BEA was an important first step to give us the three-tier architecture and give us more of the messaging between the client and the application server. So we're just going to keep moving forward.

How do you see Oracle competing in the applications arena?

We have seen no increase in competition from Oracle since Larry [Ellison] took over [the applications business]. And rumor has it he didn't know much about what his own applications did at [the Oracle] user conference. That tells me that he's still not taking it



"I personally don't think Larry Ellison cares about happy customers."

— David Duffield

too seriously. I personally don't think Larry Ellison cares about happy customers.

What are your customers telling you about year 2000 these days, and where are they in their readiness or preparedness?

We've had successes with some political organizations, going into production like in six weeks. I mean, you can do it, but the customer has to be prepared mentally, emotionally. They've got to do it fast, they can't have everything the

way they want it. And yet, we offer the ability that whenever they're past their problems, they can reconfigure the software to be more friendly to their particular needs. We also have an outsourcing initia-

tive; we're talking with partners, big companies—like EDS [Electronic Data Systems], and CSC [Computer Sciences Corp.] — [and] they will provide the software to the customers on an outsourcing basis.

So does this outsourcing program exist today?

We are exploring them. We have a new initiative called PeopleSoft Business Network. And what that is is another offering to the middle market [in which] you could rent your applications from PeopleSoft over the Web. Actually from PeopleSoft and a service provider. We'll partner with folks that will do that.

Does that exist or is it something you're working on?

We got our first customer.

Who is it?

Excite.

There has been so much talk about Windows NT, in that customers don't trust it to run big applications. What's been your

feedback on that?

Well, NT can operate on all three tiers, NT on the server is doing phenomenally well. On the middle tier, the application server. When it comes to the database server, it's doing OK for smaller to medium-size companies. But yes, the big companies aren't moving to that just yet.

Do you have some kind of workflow initiative?

Yeah, we have a very good workflow middleware. It's been operational since PeopleSoft 6.

To come back to middleware for a second, is there a need for something that would be packaged, like a PeopleSoft application server?

Yeah.

So is that something you're thinking about?

We are thinking about partnering in that area, and we are partnering in that area, with Cisco, Microsoft, HP [Hewlett-Packard], and Compaq.

Logistics prove thorniest issue in year-2000 efforts

■ Bureau of Indian Affairs taps contractor for project management to supplement Y2K coding efforts

By Ted Smalley Bowen

FACING THE DAUNTING TASK of coordinating year-2000 projects among its far-flung and varied facilities, the U.S. Department of the Interior's Bureau of Indian Affairs (BIA) opted to outsource part of one critical aspect of the undertaking—project management.

Like many organizations, the BIA has the in-house programming talent to handle year-2000 coding, but, having never tackled a year-2000 project before, it lacks the project management skills to handle a year-2000 project's myriad logistical complexities. By blending in-house programming muscle with external management expertise, the Bureau struck a balance that is letting it move quickly on year-2000 fixes without busting its budget.

Serving roughly 550 tribes, the 11,000-person BIA manages about 200 reservation schools and various other facilities.

The Bureau handles its year-2000 efforts from the BIA branch in Albuquerque, N.M., which serves as its information resources management (IRM) hub, says Mona Infeld, branch chief for applications. The IRM center's 15 programmers are all engaged in year-2000 bug finding and fixing, but help with the job of coordinating the projects was outsourced to MitreTek, an offshoot of defense contractor Mitre Corp.

"It was a cooperative effort to develop the project plan, the narrative, and charts. They

brought to the table their knowledge of the year-2000 problem and could identify some of the key issues, specifically configuration management," Infeld says. "For managing a project this size, you not only need a plan, but a configuration management plan to track and make information available for reporting."

As is common, one of the Bureau's highest hurdles in the race to ready its systems for the millennial shift was getting an accurate picture of all of the applications, elements of the IT infrastructure, and embedded systems that might be affected.

The first challenge was spreading the word.

"The key is awareness, getting everybody to realize, 'Hey, there might be a problem.' It's hard to enlist a point of contact for each site," Infeld says.

Next, the BIA had to collect reports from its various divisions. For this purpose, the BIA and MitreTek jointly developed an inventory requirements plan and MitreTek developed a Web-based system for compiling and tracking inventory at the Bureau's field offices. The inventory system tracks every possible device that could be affected by the year-2000 bug—from desktop PCs to fire trucks. The system has long-term benefits as well in that it will help the Bureau plan routine system upgrades and generally get a better handle on its IT holdings, Infeld says.

In addition to improving year-2000 project management, MitreTek's expertise will also figure prominently in proving to the proper authorities that the work was done

The U.S. Department of the Interior's Bureau of Indian Affairs Albuquerque Area Office

Task

The Bureau Coordinates and carries out year-2000 projects throughout a highly decentralized organization with varied facilities and IT systems.

Key approaches

The Bureau meets its Web-based inventory tracking system with help in scope and end-to-end configuration and testing requirements. Its collaboration with MitreTek in overall project management prepares the Bureau for reporting and auditing requirements.

correctly.

The BIA's reporting requirements are strict and manifold. The Bureau must provide details on year-2000 fixing procedures, testing, and, eventually, verification of year-2000 compliance to the Department of the Interior, which in turn answers to the Office of Management and Budget and the White House year-2000 task force.

"We've got a lot of oversight," Infeld says, in an understated manner.

MitreTek's role is to provide third-party certification that the work happened and was performed correctly.

In contrast to its need to outsource project management, the BIA was able to complete its programming work speedily and smoothly using in-house talent. The Bureau's programmers have completed converting the mostly Cobol code of its critical applications, which date from the late 1970s and early 1980s, according to Infeld.

Infeld credits its programming success in

part to Data Integrity's Millennium Solution year-2000 tool, which it used to handle the identification, remediation, and regression testing of year-2000 code. The tool helped the BIA churn through more than one and a half million lines of code in the first six weeks of the coding phase. The location and remediation phase of the work took about a week and a half, with the entire project consuming less than 600 hours of labor, partly due to the low training requirement and ease of use of the tool.

To date, the BIA's in-house/outsource blend of skills on the year-2000 project is working well. Its Bureau has completed the first pass of its year-2000 testing on the code, and has resumed production work with some of the applications, according to Infeld. The next phase puts to use the inventory information compiled with the MitreTek system.

"Our applications are ready to rock and roll, but the question is whether the infrastructure is going to handle it," Infeld says, adding that the Bureau is just beginning developing the plans and scripts for end-to-end infrastructure compliance testing.

But even with the outside help and smooth work to date, the year-2000 project is huge and the Bureau is wary of programmer burnout.

"We've kind of broken up the process. We're at a stage where we can step back and take a breather. It's more of a self-preservation thing for us. You can't die a dead horse, so we're making sure our people are well rested and taken care of," Infeld says.

Y2K bites the supply chain

By Blaise Zerega

When the conveyor belts start humming the first workday of the year 2000, many IT managers may find their minds wandering beyond the confines of their business. Although they may feel totally secure about their own manufacturing site's capability to hum without year-2000 glitches, the readiness of their supply chain — the hundreds or thousands of suppliers scattered around the world whose compliance is critical to smooth operation — will likely weigh heavily on their minds.

Whether it is the manufacture of guns or of butter, there are many systems beyond a manufacturer's control — everything from dashboard-mounted computers in delivery trucks to power delivery systems at utilities. Each of these systems poses a year-2000 threat and the potential for business disruption.

With so many potential weak links in supply chains, manufacturers need to examine their relationships with key suppliers. And although experts disagree on the extent and cost of supply chain disruptions, they agree that straight-ahead assessment, testing, and remediation approaches that have proven successful for internal systems must be applied to external vendors.

Paradoxically, the most fine-tuned manufacturers may be the most at risk. Analysts say two efficiency initiatives within supply chains — just-in-time (JIT) inventory and a high-degree of automation — increase a company's vulnerability to year-2000 problems from its business partners.

"The just-in-time system is certainly going to exacerbate the effects of the problem. In a just-in-time system, there are no contingencies in the event of an IT breakdown," says Ed Yardeni, chief economist and managing director at Deutsche Bank Securities, in New York, describing the fragility of today's supply chains. "Supply chains are only as strong as their weakest links."

With JIT inventory, companies drastically reduce lead times and they cease to stockpile inventory. This has been made possible by suppliers' increased manufacturing and shipping efficiencies. Now, companies depend on

vendors to supply raw materials on short notice — a move that saves inventory control costs and pushes the actual inventory costs off companies' financial books and up the supply chain to suppliers.

Automated intercompany communication in the form of electronic data interchange (EDI) also increases the risk of a company's computing systems being brought down by business partners' year-2000 problems through noncompliant interfaces and exchange of noncompliant data.

"If you are [electronically] connected with multiple external vendors, then you have a much higher risk of receiving a year-2000 bug," says Tom Oleson, research director at International Data Corp., in Framingham, Mass.

With their own systems under control, manufacturers eye suppliers for Y2K bugs

To ensure compliance within a supply chain, most manufacturers begin by identifying potential hot spots, assessing their risk, and fixing the problems. For example, the automotive industry has an industrywide compliance initiative under way that involves 125,000 suppliers. But for many manufacturers, no industry initiatives exist and they must go it alone, with the largest companies spearheading compliance efforts.

Armstrong World Industries, a \$2.1 billion manufacturer and seller of building materials in Lancaster, Pa., identified four critical areas within its supply chain: material supply, service providers, technology providers, and electronic providers.

Material supply is a large concern at Armstrong because there are more than 10,000 suppliers. To date, only about 50 percent of them returned surveys of readiness that were sent out in the first and second quarters of 1998, according to Tony Lombardi, year-2000 project coordinator at Armstrong. (See "Sears tackles Y2K compliance with partners," July 20, page 16.) Still, Armstrong's survey response rate is typical.

Some early reports on partner readiness are not very reassuring. The Securities and Exchange Commission found in its readiness report on 1,023 public and Fortune 100 companies that only 49 percent of companies "[had] plans to evaluate or [are] evaluating the year-2000 technology problems of those



entities with which [they have] material relationships."

A BEST OF TRUST. Manufacturers say the best way to take control of the supply chain is to focus only on mission-critical suppliers. For example, Chicago-based Metz Baking, with 16 factories throughout the Midwest, selected 2,000 mission-critical suppliers from its pool of roughly 30,000 suppliers. Metz has asked only key suppliers for compliance statements, says Larry Hames, senior vice president of MIS at Metz, in Sioux City, Iowa.

Lombardi points out that in most cases, the only contact between suppliers and Armstrong is the trucks or rail cars that pull up to factory loading docks. For these companies, maybe half of all total suppliers, a written statement of readiness will suffice.

"A lot of it has become somewhat subjective based on the relationships we have with suppliers," Lombardi says. Armstrong purchasing managers are likely to base their decision about a supplier's year-2000 readiness on the basis of trust and experience.

Another manufacturer that is depending on trust and good faith from its noncritical suppliers is Coors Brewing, in Golden, Colo. Coors has roughly 6,000 key suppliers and maintains electronic interfaces with about 25 of them.

According to Byron Ferguson, expert developer at Coors, a written statement that a supplier is working toward readiness is sufficient in most cases. But for mission-critical vendors, an in-depth audit and test results may be required. Ferguson bases the definition of mission-critical vendors on the question: "Who is it that without them we can't make, ship, and sell beer, or move money?"

Metz also takes a trusting approach for

noncritical suppliers.

"We just want some assurance that their trucks will arrive in January 2000," Hames says.

St. Louis-based food giant Monsanto is setting a deadline of the end of the first quarter in 1999 for its suppliers to be compliant. If these suppliers aren't ready, the company will reconsider the relationship.

"Anybody doing business with us that can't be compliant by the end of first quarter 1999 is putting us at risk," says John Ogens, director of Monsanto's global year-2000 program, adding "there are some exceptions."

Analysts agree that in situations where no industry-wide testing exists, on-site assessments offer manufacturers the best assurance of their suppliers' readiness.

"If you can get to the supplier's site then you've mitigated your risk to a great extent," says Kazim Isfahani, an analyst at the Giga Information Group, in Boston.

But not all companies are prepared to perform on-site assessments and testing, fearing the legal ramifications of remediate another company's systems.

"Legally we can't even set foot on their premises because then we become responsible," Coors' Ferguson says.

Analysts say that potential legal liability is stopping companies from opening their systems to each other, and may explain why so few have conducted coordinated tests. "There's an amazing sense of arms-length relationships when it comes to this issue," says Deutsche Bank Securities' Yardeni.

CONTINGENCY PLANS. One result of the wariness regarding year 2000 in the supply chain is the need for contingency plans.

Armstrong and Coors are now developing final readiness deadlines for key vendors,

after which the companies will institute contingency plans.

However, analysts point out that switching vendors is not easy. There are transactional processes to be worked out and assurances that the new vendor is year-2000 compliant must also be obtained. Switching vendors may require retraining and walk-throughs.

In some cases, though, contingency plans are not possible.

Alternative suppliers do not always exist, as is the case for manufacturers such as Armstrong.

"The biggest concern is the company that is a single source provider," Lombardi says.

For irreplaceable suppliers, analysts say manufacturers may have to brush legal concerns aside and perform year-2000 tests and remediation for them.

"I think forward-looking companies will get compliant even if it means doing the year-2000 work for [their business partners]," Isfahani says.

Armstrong maintains EDI interfaces with 40 to 50 percent of its suppliers and about 70 of its largest customers, according to Lombardi. The risk posed by EDI is that not all of Armstrong's business partners are moving to fully compliant year-2000 EDI. Some are electing to stay with two-digit years, which requires "windowing," a technique where an arbitrary year, say "79," is chosen as a cutoff between centuries. Thus, "28" will refer to 2028, but "30" will refer to 1930.

"It's perfectly legitimate as long as both sides of the communication understand what's going on," Lombardi says.

Lombardi says the situation will cause some

headaches, but it will be worked out through coordination and testing.

For companies with only a few electronic connections the risk is minimal. For example, Metz has electronic tie-ins with only three suppliers, the company's bag suppliers. According to Hames, the risk posed by these interfaces is very low.

"We don't have a problem because they're using our software," Hames says.

OVERCOMING JUST IN TIME

Manufacturers insist that as long as trucks and rail cars arrive with supplies, production can go on, even if it means using a paper-based system.

"I assure you that Coors will be brewing beer at the start of 2000," Ferguson says.

How manufacturers will accomplish this remains to be seen, analysts say. To begin stockpiling inventories may require the building of warehouses and restructuring of accounting processes — neither is cheap nor easy. There's also the problem of lengthy lead times for scarce raw materials.

"It's way too late to even imagine that we can move from a just-in-time to a just-in-case system," Yardeni says.

But the impact of a disruption in the supply chain is dramatic. Consider the recent 54-day General Motors strike, which forced the temporary closing of two parts plants. All manufacturing processes halted, putting 195,000 workers out of work and costing the manufacturer as much as \$2 billion.

Senior Writer Blaise Zerega (blaise_zerega@infoworld.com) covers year-2000 issues for InfoWorld's Enterprise Computing section.

TEST CENTER RX • LAURA WONNACOTT

When the going gets tough, look to Win95 to shirk the easy out and the quick fix

I have a situation where we are trying to log on to two different Windows NT Servers in two different domains with two different user IDs from one machine. When using a Windows NT Server or Workstation, it works fine because we can do a 'connect as.' However, Windows 95 does not have this option.

David Bernt

Great question. It points out one of the many dissimilarities between Windows 95 and Windows NT Workstations. Unfortunately, there is no easy quick fix for your ailment. Microsoft's Windows 95 client simply does not support multiple log-ons.

You have a couple of options, but they are far from elegant. You could set up duplicate user IDs on each of the servers or create a trust relationship between the domains.

I have a Windows 95 machine that I use to connect to the Internet. I would like to restrict the ability of anyone but myself from connecting to the network, which is run on Windows NT 3.51. Since anyone with a valid user account on the domain can log on to the server, I need a way to block access to the network while still allowing users to use this station to access the Internet.

Marvin Smith

Again, another great question, but I don't know of an easy fix. It looks like you have at least two options.

The first is to create policies at that workstation for each user who wishes to access the Internet. The problem with this is that you may have to create an account for each user who is permitted to log on to that machine.

Another option is to utilize Windows NT's log-on restrictions. Within the log-on restrictions you can specify where the user can log on to a domain. Log-on restrictions only provide for eight workstations per user, so this will work only if you're a small shop.

What's with all the e-mail bugs?

It seems like there has been a relentless wave of e-mail-related bugs lately. The most recent bugs were reported in Microsoft Outlook,

Microsoft Outlook Express, Netscape Mail, and Netscape Newsreader. This type of bug has been identified as a buffer overflow bug. Buffer overflow bugs were also discovered in Microsoft NetMeeting not too long ago. Though many of these vulnerabilities are new, buffer overflows are not. Sure, these flaws are serious, but the method of attack is nothing new. We will probably see more and more of these during the next year, and here's why.

Buffer overflows are one of the oldest types of vulnerabilities around. They've been in Unix for many years. A buffer overflow occurs when a program simply tries to store too much information in too little space.

This problem is becoming all too common because we're failing to follow good programming practices. The expertise required to exploit a buffer overflow vulnerability is generally beyond the majority of hackers' capabilities, though there are certainly many out there who are capable of doing so.

A hacker's malicious code will be stored where the application expected the data to go, and part of it will run past that buffer — including the program's stack. The stack includes information on where to return after

a portion of a program is complete.

Hackers find stack information very useful. They can write a buffer overflow exploit that typically overwrites the stack information and tells the program to return to the middle of the original data. Characters in the data can then execute as actual program code.

Although it is impractical to send large programs as malicious code, it is possible to write small programs that could do very malicious things.

For example, a recent exploit for Microsoft NetMeeting by DilDog, a member of the Cult of the Dead Cow hacker group, exploited a buffer overflow to load a small "stub," which in turn downloaded code from the Internet and then executed it.

Although DilDog's code was harmless demonstration code, there's nothing to keep a skilled hacker from developing code to download a virus, Trojan horse, or other undesirable code from the Internet.

Test Center Technical Director Laura Wonnacott has been working with computers for 15 years. Test Center Manager Brooks Talley provided this week's explanation of buffer overflows. Send us your questions at testcenter_rx@infoworld.com.

IPv6 cuts address chaos

Definition

IPv6: The next generation of the dominant networking protocol. This upgrade from IPv4 will include improvements such as simplified routing and increased address space to better support business computing.

By Brooks Talley

IIPv6 — the next-generation networking protocol — is coming, and it promises to change the way corporate networks and the Internet work. An infrastructure issue that's more akin to a new banking regulation than a hot new technology that you can leverage for competitive advantage, IPv6 (also referred to as IPng or, simply, v6) will eliminate some of IPv4's shortcomings that have appeared as a result of the global Internet explosion. IPv6 is a much-needed improvement, promising easier-to-obtain IP addresses, cheaper and faster routing, and such features as quality of service (QoS) and encryption for your enterprise.

The transition from IPv4 to IPv6, though, won't be painless. Efforts to provide backward compatibility between IPv6 and IPv4-based applications and routers definitely will help ease the transition within your enterprise. However, your IT staff, including network engineers and programmers, will be most affected by the change to the new protocol.

Although it will be quite some time before we're faced with IPv6-only networks, the specification's core elements are more or less in place. Your IT organization should begin implementing the new protocol on a test net-

work to gain familiarity with IPv6 and avoid incompatibilities within your enterprise.

How it works

Currently, IPv4 uses 32-bit addresses, which are represented as 4 bytes with dots between them. Although in theory the 32 bits allow more than 4 billion hosts, the need to simultaneously give out many addresses significantly reduces the number of those available. Even if 4 billion hosts were available, the addresses would run out before too long.

IPv6 uses 128-bit addresses, offering a theoretical maximum of 340 trillion, trillion, trillion hosts. As with IPv4, the reality is that the number of available IPv6 addresses will be less than the theoretical maximum. However, even a pessimistic estimate based on routing inefficiencies and a host of other factors still would allow 1,564 addresses per square meter of earth, said Christian Huitman, a key founder and developer of the Internet. An optimistic estimate suggests there would be 665 million billion addresses per square meter.

Another drawback to IPv4 has been the way in which addresses are assigned; it's difficult to tell where a given address is located, either geographically or with regard to network topology. Because of this inefficiency, Internet backbone routers maintain huge

tables of where to send information for any given address. The end result is an inelegant network design that creates too much work for the routers and slows their performance.

IPv6 will reduce this addressing chaos by ensuring that addresses are given out in an elegant hierarchy. Large Internet service providers will receive huge blocks of addresses and pass out smaller blocks of those addresses to subscribers who, in turn, may pass on increasingly smaller address blocks.

Using this hierarchical scheme, IPv6 can represent large blocks of addresses by a single entry in routing tables. This will simplify routing, allowing backbone routers to look at only small parts of an address to determine the packet's destination. In addition, the hierarchical model will reduce the cost and complexity of Internet routers.

IPv6 also includes improved packet headers, which are quite different than IPv4's packet headers (see diagram, below). IPv6 uses a header with a fixed size of 24 bytes. In contrast, IPv4's packet header is variable in size, which creates more work for routers because they must look at more information than they actually need to forward packets to their destination.

With IPv6 there will be the capability to define additional features such as QoS by using a chaining mechanism. To keep the header as simple as possible, the essential packet data

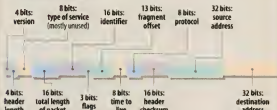


IPv6 expands address space, reduces packet-header size

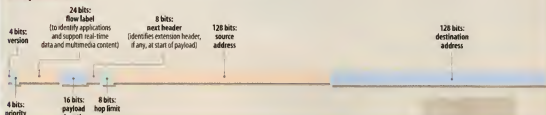
With IPv6, address space is greatly expanded, with 340 trillion, trillion, trillion addresses being available. In spite of the increase in address space, packet headers — the essential part of every piece of information exchanged that identifies the data's source, destination, etc. — will actually be smaller. With simpler packet headers, routers and computers will be able to more easily process information.

IPv6 uses "chaining" to reduce the size of packet headers. Chaining allows for multiple headers at the beginning of a packet. But packets only contain the headers (such as quality of service) that they need. In contrast, IPv4 includes many general-purpose fields in a much larger packet header, which leads to more overhead that slows down the exchange of data. Another benefit of IPv6's header chaining is that it allows the Internet Engineering Task Force to define additional features in the future.

IPv4 packet header



IPv6 packet header



THE BOTTOM LINE

IPv6

IPv6 completely redefines IP addressing and routing, and adds key features. Both network infrastructure and programming will be greatly affected by the transition from IPv4 to IPv6. Your networking and application development professionals will need time to get up to speed on IPv6 — if you start preparing now, you will be ready for the change.

■ **Pros:** Greatly expands address space; simplifies routing; supports encryption; includes Anycast for sending a packet to any one of several destinations; backward compatible; extensible.

■ **Cons:** Challenging to learn; IP addresses difficult to remember; will break older applications.

(for example, source and destination) resides in the standard IPv6 header, and one field of the header specifies whether the payload begins after the header or whether there's another header.

Additional IPv6 header types include routing information, security encapsulation (encryption), and fragmentation. Each of these headers has the same "next header" field, which specifies how the data succeeding it should be treated — as the payload or as an additional header.

IPv6 also offers improved extensibility. IPv4 currently lacks a mechanism for adding features, such as encryption, at the protocol level. Although features can be added by using additional protocols, such as Reservation Protocol, or RSVP, for QoS, it's an inelegant patch. The Internet Engineering Task Force has designed IPv6 so the protocol can be extended as needed without having to completely redesign it.

The enterprise role

IPv6 isn't just a technical solution to a technical problem. The current and future use of IP networks in business has spurred many of the changes being implemented in IPv6. Within your enterprise, IPv6 will simplify routing and reduce network administration. In an effort to ease the transition to the new protocol in your enterprise, the specification provides IPv6-in-IPv4 tunneling, which allows IPv6 packets to travel over networks that only support the older protocol. Tunneling is being used today to create the 6bone, an international, experimental IPv6 network that runs over the Internet. This kind of interoperability is key to making the transition to IPv6 as easy as possible.

To further smooth the transition, much is being done to maximize application compatibility with IPv6. For example, such protocols as TCP, UDP, ICMP, OSPF, BGP, and even RIP are being upgraded to comply with IPv6. Un-

fortunately, because most OSes require applications to know about IP addresses, your in-house developers will need to update most applications to support IPv6 addresses.

There already are many applications that support IPv6, though most are in the experimental stage and evolving as changes are made to the protocol specification. Most of the available IPv6 applications are network utilities, such as Telnet and FTP; but there is an IPv6-compatible version of the Apache Web server available.

Finally, IPv6 will reduce network administration by obviating the need for Dynamic Host Configuration Protocol (DHCP) on many networks. IPv6 allows autoconfigurable hosts by using the host Media Access Control address for part of the IPv6 address combined with Remote Desktop Protocol, or RDP. Although this lessens the need for protocols such as DHCP, network- or platform-specific information still will need such a mechanism. After many years of dealing with host-address configuration issues, we were delighted with this aspect of IPv6's design.

Technology time line

There is no question that IPv6 will be adopted. We just don't know how fast the new protocol will spread throughout the Internet. For that reason, IT shops should ensure that any new equipment already supports IPv6. In addition, you should start identifying older equipment that isn't upgradeable to IPv6.

Perhaps the most difficult part of the transition from IPv4 to IPv6 will be for those who have to work with the new protocol. Network engineers will need to learn a host of new skills to deal with IPv6, from troubleshooting to basic router configuration.

Also, as with any new technology, those who understand IPv6 will be in great demand for a long while. This, of course, will translate into higher labor costs for IT shops that want to contract IPv6 transition services. Having someone in-house who's well-versed in IPv6 could mean huge savings down the road.

Beyond that, network infrastructure will need the most work. Although routing will improve, it will still require quite a bit of work to implement. You'll need to upgrade routers with newer firmware and replace IPv4 static routers with IPv6 equivalents. And though old routing protocols such as RIPng will remain, this is probably a good time to move to a more robust routing protocol such as Open Shortest Path First, or OSPF, which will support IPv6.

IPv6: The once and future protocol

Problems solved by IPv6

The following are some of the shortcomings rectified in the new protocol specification.

Problem	IPv4 solution	IPv6 solution
Address-space shortage	Network Address Translation	Greatly increased address space
Encryption	Add-on protocols (e.g., IP Security protocol, Point-to-Point Tunneling Protocol)	Built into packet header
Quality of service	No real solution	Built into packet header
Finding closest instance of resource	No solution	Anycast
Finding local router	Dynamic Host Configuration Protocol (DHCP) and BootP can give out the information	Remote Desktop Protocol built into protocol specification
Ensuring unique address	DHCP	Uses Media Access Control address in network address
Adding new features	New protocols run on top of IP	Chained headers allow for future expansion

IPv6 stacks up

To help ease your transition to this new networking protocol, you can use one of these functional IPv6 stacks, which work with the most popular operating systems.

Vendor	Operating system	Status	URL
Digital Equipment	Alpha Digital Unix	Prototype	http://www.digital.com/info/ipv6
IBM	AIX 4.3	Released	http://www.austin.ibm.com/software/OS/aix43.html
Linux	2.1 experimental kernel	Experimental	http://www.linux.org
Microsoft	Windows NT 4.0	Prototype	http://www.microsoft.com
Sun Microsystems	Sun Solaris 2.5 and 2.5.1	Prototype	http://playground.sun.com/pub/solaris2-ipv6/html/solaris2-ipv6.html

There will also come a time when you'll need to migrate your client hardware to IPv6. We can only hope that OS vendors include some migration tools in their next few releases, but vendors such as Microsoft and IBM have been notably silent on the matter.

Fortunately, you can gradually migrate your entire network to IPv6 — but it's never too early to start planning for it. There's bound to be some equipment that simply won't work with IPv6.

Beyond the network, your developers should start thinking about IPv6 issues now if their applications in any way make use of network communications over IP. We expect that many applications will break when IPv6 appears — and even more will break when IPv4 entirely ceases to exist.

Finally, your organization should start working with IPv6, in prototypical installations at least. The sooner you become familiar with the protocol, the easier the transition. You can obtain functional IPv6 stacks for most popular operating systems (see chart above). We recommend using Windows NT's

experimental IPv6 stack if you want to focus mostly on application issues, or the Linux IPv6 (part of the 2.1 kernel) if you really want to get deep into IPv6.

You also can connect to the 6bone. Getting the stacks loaded, finding a pseudo-Top Level Aggregator, or p-TLA, provider, and getting everything working takes quite a bit of work; but it's well worth the effort for the experience and the capability to test IPv6 applications and equipment in an Internet environment.

IPv6 is a vast improvement over its predecessor, IPv4, offering simplified routing, increased address space, and greater extensibility. But moving to IPv6 won't be easy. Although IPv6-only networks may be 10 years away, building an experimental IPv6 network and laying the foundation for the new protocol in your current applications and network will help prepare your organization for the inevitable switch to IPv6.

Brooks Talley is the test manager at the InfoWorld Test Center. He can be reached at brooks_talley@infoworld.com.

IPv6 resources

THE 6BONE (experimental IPv6 backbone running over the Internet)
<http://www.6bone.net>

IPV6 FOR LINUX FAQ

<http://www.terra.net/ipv6/>

MICROSOFT RESEARCH'S IPV6 STACK

<http://research.microsoft.com>

IPNG INFORMATION AND RESOURCES

<http://playground.sun.com/pub/eng/html/eng-main.html>

Evolution of the Internet and IPv6

• Packet-switched networks appear

1968

• Arpanet appears, using Network Core Protocol

1969

• Four hosts on Arpanet

1977

• 100 hosts on Arpanet

1983

• TCP/IP becomes standard Internet protocol; term "Internet" is coined

1987

• 1,000 hosts on the Internet

1989

• 10,000 hosts on the Internet

1990

• 100,000 hosts on the Internet

1992

• 1 million hosts on the Internet

1995

• Core IPv6 protocols defined

1996

• 10 million hosts on the Internet

1997

• IP multicast first implemented

1998

• Arpanet ceases to exist

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• Internet expected to be 100 percent compliant with IPv6

2000

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On-screen display menu-This screen shows the overlay menu with the selection for the color scheme popped up.

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PROGRAMMER ANALYST (Colorado Springs, CO) - Bachelor's degree in Computer Science or Engineering or its equivalent. 2 years experience in the job offered. Working knowledge of COBOL and CICS. Analyze user requirements, procedures and logical steps for coding into language design and test computer programs. Design and maintain applications. Utilize DB2 based Decision Support System to perform maintenance. Utilize DB2 Data Warehouse for enhanced programming and analysis. Utilize COBOL, CICS, JCL, TSO, Xpediter, VSAM, and Enterprise. Utilize hardware as follows: IBM 3090, ES/9000 and equivalent. 40 hr. week. Salary \$61,000.00 per year. Application by resume ONLY to Colorado Department of Labor & Employment, Attn: Jim Shimada, Office of Employment Programs, Two Park Central, Suite 400, 1515 Annapolis Street, Denver, CO 80202-2117, and refer to Job Order Number CO458641, NO PHONE CALLS PLEASE. Must have proof of legal authority to work in the U.S.

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Senior Programmer Analyst sought by company in Denver, CO specializing in business software solutions to work in Denver & other unrepresented job sites in the US. At a senior level, design & develop software tools/packages that are used to create software applications that incorporate client/server architecture & relational database management systems & run on a variety of operating systems. Provide technical support. Analyze requirements. Create designs & design documentation for the software tools/packages. Code, test & debug the tools/packages. Use programming languages & proprietary case tools in the design & development process. Provide technical assistance to programmer analysts. Requires Master's in Computer Science, Electrical Engineering or related field; working knowledge of programming languages & proprietary case tools; & relational database management systems (may be gained through previous employment or academic setting). 8am-5pm, M-F. \$84,300/yr. (2 positions). Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Annapolis Street, Denver, CO 80202, & refer to Job Order Number CO4585229.

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Senior Programmer Analyst sought by company in Denver, CO specializing in business software solutions to work in Dallas, TX & other unrepresented job sites in the US. At a senior level, design & develop software applications that incorporate client/server architecture & relational database management systems. Design & implement architecture & design using JAVA & WEB server software. Analyze requirements. Create designs & design documentation. Code, test & debug these software applications. Use C++, HTML, & ASP languages & Internet information Server software in the design & development process. Provide technical assistance to programmer analysts. Requires Master's in Computer Science, Electrical Engineering or related field; working knowledge of the design & development of software applications using C++, C++ & relational database management systems. 8am-5pm, M-F. \$84,300/yr. (2 positions). Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Annapolis Street, Denver, CO 80202, & refer to Job Order Number CO458354.

R. Programmer Analyst sought by a consulting & software development company in Denver, CO to design & develop ORACLE database software applications primarily for the insurance industry that incorporate client/server architecture. A run on a UNIX operating system on the server side & Windows operating system on the client side. Analyze requirements. Create designs & design documentation. Code, test, & debug the software applications or modules. With SQL & PL/SQL, create basic processing scripts of procedures, functions & triggers to manipulate data operations & data transfer. With ORACLE client-side applications, develop & test ORACLE forms & ORACLE reports. Provide non-urgent assistance to clients. Requires Master's degree in Computer Science, Electrical Engineering, or MBA with emphasis in MIS, or related degree; working knowledge of developing ORACLE database applications using PL/SQL. \$54,300/yr. 9:00AM to 5:00PM, M-F. Job opening in Denver, CO. Department to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Annapolis St., Denver, CO 80202. A refer to Job Order No. CO458352.

Senior Data Manager/Design & manage a corporate analytical methodology of the customers usage of products, through direct knowledge & use of software applications. Coordinate with others located internationally that utilize the company's telecommunications services. Provide problem solving of billing, payment questions, correct usage of telephone services & follow-up. Interface with client & management levels, coordinate employees, within same department to work on the management analysis of the telecommunications requested. B.A. in Economics. 40 hr/week. \$84,000.00/yr. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Development, 51 W. Washington, Fairfield, IA 52556-0031. Please refer to Job Order #1017082. Employer paid advertisement.

Systems Analyst (Sr. Consultant). Develop automated business systems serving customers according to client functional requirements, using RDBMS, computer-aided software engineering, RDBMS applications development tools, & programming languages. Analyze requirements, & computing systems & build logical & physical data models. Test & test RDBMS applications. Train users & support applications. Must have BS in Computer Science, Info Systems, Engineering (any field) or Math & 2 yrs exp equivalent in RDBMS systems & applications on Unix computers. \$5,250/mo. Resumes to job order CO4583143, Colorado Dept. of Labor & Emp., 1515 Annapolis St., Denver, CO 80202-2117.

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CAREER PATHS

Jonathan Lasser

English degree teaches system administrator valuable skills



JONATHAN LASSER KNEW when he entered college that he wanted to be a system administrator, yet he chose to major in philosophy and English instead of computer science. He attributes his success at finding a job in his chosen field to his college work experience and participation in professional associations such as SAGE, the System Administrators' Guild. Lasser enjoys writing and says his goal is to earn a living as an author of technical books or fiction.

JONATHAN LASSER

Experience

- May 1998-present
Unit system administrator,
University of Maryland, Baltimore
- January 1995-March 1998
Student employee, computing
support team, Goucher College
- December 1997-January 1998
Intern, Electronic Privacy
Information Center
- June-August 1993
Technical support, PC Literature
- Education**
- BA in philosophy and English,
1990, Goucher College

and hardware design. I knew that wasn't what I wanted to do. Even going into college I knew I had an interest in system administration. I couldn't find any program that did what I wanted in a place that I would like to live for four years.

Have you had difficulty getting job interviews because of your nontechnical degree?
Not really, because through SAGE meetings, I got to meet a lot of people. There were places where I was told that I would have some trouble with the degree, but generally those were large government contractor positions, and I wasn't interested in that anyway.

What do you tell employers that you bring to a job because you have a humanities degree?
I wouldn't claim that people with technical degrees don't know how to think clearly, but it's a degree that helped me to organize, think clearly, and plan things out.

—Margaret Steen

Skills lead to success

■ Degrees and training teach what you need to know to move up

By Margaret Steen

ALTHOUGH THERE are many paths to success in IT, some types of education will make climbing the career ladder easier.

But the wide variety of degrees and technical training programs available to IT professionals can make evaluating educational options overwhelming.

Whether you are weighing going back to school, evaluating the credentials of potential candidates, or advising your employees, it's important to consider what skills each program teaches. A successful career will require foundation skills, technical skills, and business-related skills, each of which can be acquired in various ways. (See chart on page 78.)

FOUR-YEAR DEGREES. "I have many years of higher education but never earned a formal degree," says Olympia Borys, a systems consultant at Entex Information Services, in Bloomfield Hills, Mich.

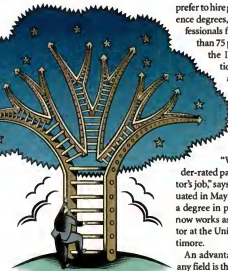
Borys doesn't discourage getting a degree, but she says technical skills are more important. And she is not alone: Some people estimate that as many as half of all IT jobs, especially entry-level ones, could be filled by those without four-year degrees.

"The only problem is, I'm not sure what your job will be after that," says Richard Skinner, president of Clayton College & State University, in Morrow, Ga. "You can enter the field, but you're probably going to have to continue your education."

Although there are exceptions — like Borys — people who enter the IT field today without a degree could find their careers stalled later. Many management positions require a four-year college degree, and in general, people with higher degrees make more money. (See chart, right.)

Advocates of four-year degrees say the programs that lead to these degrees are an excellent way to learn the foundation skills necessary to succeed in the ever-changing world of work: problem solving, communication skills, and, above all, the ability to continue learning.

"I view college as preparation for the modern career structure, which is a multiple career structure," says Arvon Barr, co-director of software research at



the Stanford Computer Industry Project, in Stanford, Calif.

Teaching up-to-date technical skills is often viewed as a weakness of four-year institutions. Companies that emphasize hiring four-year college graduates say they value graduates' ability to learn — and they look to students' internships or work experience to provide the necessary technical skills.

"The difference is, do you hire somebody to do a job or somebody who has the foundation and can go quickly from one technology to another?" says Norma Abe, IT recruiting and diversity manager at Hewlett-Packard, in Palo Alto, Calif.

The importance of having a bachelor's degree in computer science, as opposed to one in another area, is a subject of intense debate. Although some companies say they

prefer to hire graduates with computer science degrees, there are successful IT professionals from all majors: Of the more than 75 percent of the respondents to the 1998 InfoWorld Compensation Survey who said they had a bachelor's degree, only 26 percent had degrees in computer science. Healthy numbers of respondents had backgrounds in business (19 percent) or the humanities (15 percent).

"Writing effectively is an under-rated part of the system administrator's job," says Jonathan Lasser, who graduated in May from Goucher College with a degree in philosophy and English and now works as a Unix system administrator at the University of Maryland, in Baltimore.

An advantage of a four-year degree in any field is that it opens up the possibility of future degrees, such as an MBA. (For a more complete discussion of graduate opportunities, see <http://www.infoworld.com/printlinks>.)

John White, manager of enterprise computing at Cluett-Peabody, a clothing manufacturer in Atlanta, has a bachelor's degree in computer science and a master's degree in the management of technology (MOT). He holds no certifications. White says the bachelor's degree provided "fundamental grounding for my computer career" and that the MOT degree — roughly the equivalent of an MBA — helped him to increase his understanding of business and advance in his organization.

TWO-YEAR DEGREES. Two-year associate's degrees are granted by community colleges and are generally much less expensive than four-year colleges. Often students can earn a two-year degree and continue with a four-year degree later.

"[Community colleges'] primary purpose is to serve the local communities," says Kristin Becker, a project coordinator at the American Association of Community Colleges in Washington. "Most have strong collaborative relationships with business in the local community."

Because of this focus, community colleges can often adapt more quickly to meet the needs of businesses than four-year colleges can. But this can also be a drawback.

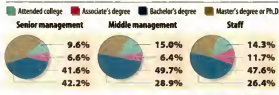
► **Education** page 78

The higher the degree, the fatter the paycheck

Average salaries based on level of education

Associate's degree	\$56,386
Bachelor's degree	\$65,075
Master's degree	\$71,758
Ph.D.	\$83,606

Degrees help advance careers



SOURCE: 1998 INFOWORLD COMPENSATION SURVEY

CAREERSHOT SITE <http://www.workzone.net>

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The Work Zone offers practical tips, career development advice, and other resources for job seekers.

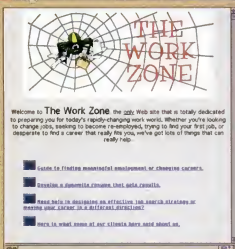
WHAT YOU'LL FIND

Articles on a range of subjects, including job-search strategies, interview preparation, networking, and marketing yourself.

HOT TIP

The guide section contains a résumé development worksheet, sample résumés, and a list of questions to ask yourself before writing a cover letter.

— Jim Battey



Welcome to The Work Zone, the only Web site that is totally dedicated to preparing you for today's rapidly-changing work world. Whether you're looking to change jobs, seeking to become re-employed, trying to find your first job, or desperate to find a career that really fits you, we've got lots of things that can really help.

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- MARTIN, IN FINDING EMPLOYMENT, OR CHANGING CAREERS.
- PAUL, IN FINDING EMPLOYMENT, OR CHANGING CAREERS.

Education

Continued from page 77

"Sometimes two-year institutions design their curriculum around one vendor," Skinner says. "Their very strength is sometimes their weakness."

Although associate's degree programs do teach foundation skills, students with these degrees may sacrifice depth of knowledge for current technical skills, making it easier to get a job immediately but harder to continue with their careers.

Because of this focus on immediately useful technical skills, many students—even those who already have bachelor's degrees—take classes at community colleges to keep their technical skills current.

TECHNICAL TRAINING AND CERTIFICATION

Many IT professionals with or without degrees who simply want to pick up a new technical skill turn to technical training.

"Degrees coupled with formal technical training and/or certifications are a great combination," Borys says.

Technical training includes vendor-sponsored certifications such as the Microsoft Certified Systems Engineer, or MCSE, and the Certified Novell Engineer, or CNE; commercial training offered by vendors and third parties; and certificate programs offered by technical institutions. The value of certifications is open for discussion, but certifications are one way to quantify technical skills. (For more on specific certification programs, see <http://www.infoworld.com/printlinks>.)

Many universities offer continuing education

Where to look for educational programs

Program	Institution
Certification	Technical schools, training vendors, some community colleges, some four-year colleges and universities
Associate's degree	Community colleges, some four-year colleges and universities
Bachelor's degree	Four-year colleges and universities
Master's degree or Ph.D.	Some four-year colleges and universities

Building blocks of a successful IT career

Employers are looking for a variety of skills in the people they hire and promote. The skills that are most important will vary according to the job. Here is a list of skills to cultivate for a successful career.

Foundation skills	Business skills
Collaboration/teamwork	Management
Problem-solving	Conflict resolution
Communication (spoken and written)	Understanding of business operation
Ability to learn	Project management
Technical skills	Leadership
Current technologies and programming languages	

or extension programs, another place to look for technical training. These courses teach specific technical skills and in some cases foundation or business skills, as well.

LOOKING TO THE FUTURE. Education may not change as fast as technology, but it is changing, and the variety of programs available makes generalizations dangerous. For example, some vendor-sponsored certification programs are offered by universities, and many four-year colleges are beefing up the technical aspects of their programs. Some community colleges are integrating foundation and business skills into their programs.

As technology continues to change, observers say continuing education will be increasingly important.

"We have to enable people to learn all of their lives," Skinner says.

Seminar Critique

Course offers Java basics

By Amy Leung

PEOPLE WHO ARE interested in Java courses fall into three basic groups: people with some programming knowledge, such as Webmasters; programmers without object-oriented programming experience, such as C programmers; and programmers with object-oriented programming experience, such as C++ programmers. Learning Tree's Hands-on Java Programming course is the best fit for the first two categories—people with little object-oriented programming knowledge.



Attendees are expected to have real-world experience in a structured procedural language such as C, Pascal, or Cobol. A familiarity with the Internet and the Web is useful; some familiarity with object concepts is helpful as well. The course has five main objectives:

- to read, write, and debug Java programs that are easily maintained;
- to learn how Java uses the object-oriented paradigm;
- to use the Java run-time APIs;
- to enhance the functionality of a Web site with embedded Java applets; and
- to develop stand-alone (non-Web), platform-independent Java applications.

At the beginning of the course, the instructor tried to understand the attendees' backgrounds in order to meet their needs. The instructor understood both the technology and the teaching materials very well. He gave many examples and shared his experience and techniques in programming, and he made sure each attendee understood the material—even spending time after class to answer questions. With his enthusiasm, the course and the materials became very interesting. According to students who had taken previous Learning Tree classes, this instructor was typical of Learning Tree's high standards.

The course materials were very thorough and great for future reference; they were as dense as what you might expect from two courses. A handout disk and a reference book—*Java in a Nutshell* from O'Reilly & Associates—were also given as reference material. Covering all of this material in only four days made the course intense. The exercise manual was supposed to offer hands-on experience. However, with the time limit, most of the exercises had to be done after hours; questions from the exercises could be answered during the class. Although there was time in class for both lecture and questions, it would have been nice if the "hands-on" Java course had offered students more time for hands-on learning.

On the last day of the course, Learning Tree offered a 1-hour closed-book course exam, with 40 multiple choice questions. Most Learning Tree four-day courses can be transferred for as many as two semester hours of college credit at many colleges and universi-

Hands-on Java Programming (Course 471)

Learning Tree International
Reston, VA, (800) 843-8733; www.learningtree.com; <http://www.learningtree.com>

Price: \$2,195 (some discounts apply)
Length of course: Four days
Locations: Classes are held in nine major U.S. cities; the class reviewed was held in San Jose, Calif.

Student placement: Course specifics and references are available in the catalog and online. Technical questions can be addressed by course instructors.

Course content: Excellent. Detailed and focused, but covered lots of material.

Course materials: Very good. Loose-leaf lecture notes and perfect-bound manual. Notes are useful for future reference.

Teaching method: 80 percent lecture and questions; 20 percent hands-on exercises.

Instructor: Excellent. Experienced, knowledgeable, dynamic, and enthusiastic.

Setting: Good. Business-class hotel conference room. Two students shared one decent laptop computer in most cases.

Class size: 16 students signed up; 12 showed up for the class. The class is designed for as many as 24 students.

Score: ★★★★★

For more information about InfoWorld's Seminar Critiques, go to <http://www.info-world.com/printlinks>.

TALK BACK

What kinds of courses would you like to read about in Seminar Critiques? Send your comments, ideas, and suggestions for Enterprise Careers articles to margaret_steen@infoworld.com.

ties; this exam is a necessary step for those who want this credit. The exam, for which there was no extra charge, was optional.

There were a few minor administrative hassles associated with the course. It was postponed once, and the course location changed twice before the first day. Students who had taken other Learning Tree courses said postponements are not uncommon.

Though this course did not make me a Java guru, I recommend it for Webmasters, Web designers, and programmers with experience in structured procedural languages who want to get acquainted with Java.

Amy Leung is a technology analyst at the InfoWorld Center who focuses on workgroup and end-user products along with Web servers and related tools. She can be reached at amy_leung@infoworld.com.

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Senior Software Engineer - Requires a BS in Comp. Sci., Math, Electronic or Electrical Eng. + 5 yrs. exp. as a Software Engineer. In line of this, the individual may possess M.S. in Comp. Sci., Math, Electronic or Electrical Eng. and/or exp. as a Software Engineer. Must have good of legal authority to work in the U.S. Duties: Design, develop and implementation of C and C++ language client/server software in a UNIX C environment utilizing INTEL administration, Microsoft Windows/NT and SQL languages, develop custom client/server for Computer and communications specific applications, system configuration, and diagnostic software. Design and develop client/server software, perform test programming in UNIX and Windows environment, process specifications, process test, process investigations and reports, possess knowledge of C++ based applications as a UNIX system, and possess knowledge of TCP/IP networking and serial communication programming; utilize network and hardware equipment. Area of Employment: Colorado Springs, CO. Salary: \$60,000/yr. 40 hr. wk. Send resume to: Jim Shmida, Colorado Department of Labor and Employment, Employment Division, ATTN: Jim Shmida, Two Park Central, Suite 400, Denver, CO 80202-2117; refer to order number C0485490.

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IS SURVIVAL GUIDE • BOB LEWIS

To plan your technical architecture, you need an organizing principle

MANAGEMENT SPEAK: We didn't budget for that.

TRANSLATION: It's a great idea. Wish I'd thought of it.

— IS Survivalist Lenny Liebmann seems long on ideas and short on budget

A DECADE OR SO ago, John A. Zachman published a seminal article on technical architecture in the *IBM Systems Journal*. (In publishing, "seminal" means lots of people cite it but almost nobody actually has read it.) Almost immediately, IBM issued a ton of press releases whose only significant impact was to verb the word "architect."

The Zachman Framework for Enterprise Architecture continues to be popular among systems theoreticians, and it is largely responsible for popularizing the idea that management of technical architecture has become a key responsibility for IS organizations. It's an important idea, because without it you end up with a junk-filled data center and a hodge-podge of applications that satisfy departmental requirements without sup-

porting the enterprise as a whole.

My own ideas about technical architecture evolved in happy ignorance of Zachman's work, and our methodologies don't seem very similar, but my platform, information, and application layers described last week match up reasonably well with his network, functions, and data.

Pick the framework you like or invent your own. Always focus on keeping your architecture management practice simple enough that you can afford to do it, clear enough that everyone in IS can easily understand it, and practiced as a value-adding discipline, not as a collection of inflexible, bureaucratic rules. You want people to adhere to the architecture because it's the best way to do business, not because the architecture police are on every corner.

The first step in constructing your architecture is to translate your company's strategic and operational goals into an overall organizing principle on which you can hang your future architecture. Having a clear organizing principle keeps things neat and tidy. But how?

Chances are, you need to deliver more capabilities than you provide today, with greater integration.

It's a shame that these two requirements conflict, but they do, because in most IS shops, "integration" means the creation of custom interfaces between every two items that need to communicate. As the number of items and the need for integration increases, the number of point-to-point interfaces increases exponentially. This means the organizing principle for most IS shops today should be the creation of an integration-centric technical architecture — one that facilitates integration in all three architectural layers.

Things become even more straightforward once you realize you only have two ways to build an integration-centric architecture.

In some circumstances you can choose a core application — maybe an enterprise resource planning suite — and make it the heart of your architecture. Rather than creating point-to-point interfaces between every two items that need linkage, you use this application as the architectural hub of the enterprise.

That's great if someone sells a core application that fits your business well enough. In an era of business diversification, mergers, and acquisitions, though, many of you will

conclude that building around a core application just isn't feasible.

The alternative is to build an integration engine. The idea is simple enough — everything plugs into it, and it handles all of the translations.

I presented this concept to a client a while back, though, in the form of a PowerPoint slide showing all legacy and proposed applications and databases plugging in to a central cylinder.

"But Bob," scolded the database administrator, "that isn't drawn to scale!"

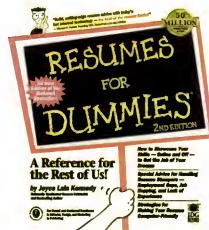
True statement.

Designing and building an integration engine is a highly complicated exercise. If you go that route, don't ever use the words, "All you gotta do is ..." Instead, tell everyone involved in the decision, over and over, that your goal isn't to make things easy. Nothing will make things easy.

Your goal is to take something that's impossible and make it merely very difficult.

Integrated anything recently? Send e-mail to Bob_Lewis@cs.com, or join his forum on InfoWorld Electric (<http://www.info>

[world.com](http://www.info)). Bob Lewis, who also writes *Advice Line* for InfoWorld Electric, is a Minneapolis-based consultant with Perot Systems.



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Application development software

PowerBuilder gains beefier tools

By Maggie Biggs

POWERBUILDER 6.5's strong set of tools bodes well for development teams that need to create client/server, Web, or distributed applications. The addition of bolstered Web, database, and component generation support makes this a worthwhile upgrade for current customers as well as a viable choice for those evaluating development tools.

Sybase stacks up well against rivals with this latest version of PowerBuilder. In particular, the Web, database, and component generation options put Sybase on par with Inprise's (formerly Borland) Delphi.

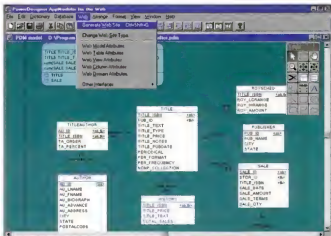
While PowerBuilder by itself is a good tool for developing applications, Sybase is also moving toward integrating the product into its forthcoming Enterprise Application Studio. PowerBuilder will still be available for separate purchase though. The suite of tools is expected to include not only PowerBuilder, but also PowerJ — the

company's Java development tool, and an Enterprise Application Server.

Enterprise Application Server

Some of the components of the Enterprise Application Server, such as Jaguar Component Transaction Server (CTS), which is a transaction server, and PowerDynamo, which is a dynamic Web page server, were included with my copy of PowerBuilder.

However, no cohesive framework exists yet to bind these tools. Also, some components such as Jaguar CTS exhibited bugs that need resolution by the company prior to the fourth-quarter ship



THE APPMODELER bundled with PowerBuilder enables analysts or developers to design physical data models and more easily generate Web applications.

date. In addition, the installation of PowerBuilder and the other Enterprise Application Studio components needs further automation and a reduction in the number of

On the Edge,
by Jeff Symons24

TALK BACK

Questions, comments, kudos? Send a message to sarah_vorney@infoworld.com. Include "Talk Back" on the subject line. To reach a staff author, use the format: first_name.last_name@infoworld.com.

dialog boxes you need to wade through. Sybase company officials told me that they are working on making the installation process easier.

Sybase's Enterprise Application Studio — when completed — should provide some good competition for other tool vendors that also sell development suites. All of the companies currently working to create common development frameworks, including Microsoft, Oracle, and IBM, are struggling with many of the same issues. Integrating a number of different development tools is no easy task. As a developer, I would love to have a single entry point to access multiple tools.

» POWERBUILDER page 84

Java development software

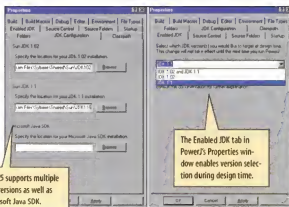
PowerJ 2.5 touts flexible JDK targeting

By Maggie Biggs

THE 2.5 upgrade of Sybase's (PowerJ) is a good bet for those already using the tool as well as experienced Java developers. The addition of flexible options for Java Development Kit (JDK) versioning and Java Foundation Classes (JFC) support bodes well for those creating enterprise Java applications.

Some of the additions found in this version of PowerJ put Sybase on more even ground when compared to other Java development tools, such as Inprise's (formerly Borland) JBuilder. In particular, flexible JDK options and JFC support are already part of Inprise's JBuilder.

Those new to Java development will find that PowerJ has some good aids and sample applications to get going with. However, the current PowerJ development interface lacks enough provisions to help new developers get productive quickly. Sybase does plan to add mechanisms for the less experienced de-



PowerJ 2.5 supports multiple Sun JDK versions as well as the Microsoft Java SDK.

The Enabled JDK tab in PowerJ's Properties window enables version selection during design time.

veloper, such as more wizards, to upcoming releases.

Common components

Like its sibling PowerBuilder (see review above), this release of PowerJ is evidence of the upcoming integration with Sybase's Enterprise Application Studio, which is expected in the fourth quarter. As a result, many of the components of the forthcoming Enterprise Appli-

cation Studio, including Jaguar Component Transaction Server (CTS), were packaged with my copy of PowerJ.

Although PowerJ and the other Enterprise Application Studio components are bundled together for this release they are not yet integrated within a single framework. The common interface will not be available until the next release of

» POWERJ page 84

THE BOTTOM LINE



PowerBuilder Enterprise 6.5

Sybase's 4GL rapid application development tool boasts bolstered support for Web applications, data design tools, and Component Object Model (COM) and CORBA support. This version also marks the beginning of PowerBuilder's integration into Sybase's new Enterprise Application Studio. But not all of the shared components and features are fully implemented.

- Pros: Offers graphical HTML editing; includes tools for Web page generation and site management; supports physical data modeling; component generation tools.
- Cons: Installation routine needs improvement; integration into Enterprise Application Studio not yet complete; some minor bugs.

- Sybase Inc., Emeryville, Calif.; (800) 478-2773; <http://www.sybase.com>.
- Price: \$2,995 per developer for Windows, \$4,995 per developer for Unix.
- Platforms: Windows 95, Windows NT, HP-UX, AIX, Sun Solaris.

THE BOTTOM LINE



PowerJ Enterprise 2.5

The addition of flexible Java Development Kit (JDK) versioning support and the current enterprise feature set continue to make Sybase's Java development tool a good value for existing customers. Those new to Java will like PowerJ's tutorial aids and sample code. However, the development interface is not as conducive to boosting productivity as those in some rival offerings.

- Pros: Support for targeting multiple JDK versions; integrated support for Java Foundation Classes, Swing components; tools for Web site management, Web application creation; components available for graphical HTML editing and physical data modeling.
- Cons: Development interfaces require experienced developers; integration with Enterprise Application Studio not yet complete; some bugs in Jaguar Component Transaction Server.

- Sybase Inc., Emeryville, Calif.; (800) 478-2773; <http://www.sybase.com>.
- Price: \$1,495 per developer for Windows.
- Platforms: Windows 95, Windows NT.

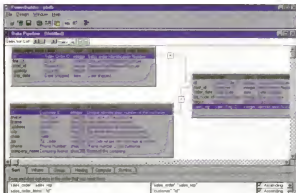
PowerBuilder

Continued from page 83

Additional generators

One of the most useful aspects of this PowerBuilder version is the introduction of additional component generators. The product already has the capability to create PowerBuilder and C++ objects. This version adds support for JavaBean Proxy and Component Object Model object generation. I found the generators easy to use and well thought out.

Developers will also appreciate the inclusion of AppModeler, which supports data modeling and Web site generation. I found that AppModeler was especially easy to work with while creating some of



DEVELOPERS USING the Data Pipeline can graphically design and create SQL queries for applications. No SQL statement coding is required.

my test applications.

On the database front, this version of PowerBuilder expands Oracle support with native access for

clients running with Oracle Version 8.0.3 and higher. In addition, PowerBuilder is now supporting accessibility to DB2 data stores on

MVS systems.

Current PowerBuilder developers should keep an eye out for the Web Deployment Kit, due in the fourth quarter. This kit will enable server-based Web deployment of PowerBuilder applications. It should make it easier to run server-based applications with lower client overhead.

PowerBuilder 6.5 delivers a strong set of developer tools that are neatly packaged in a RAD wrapper. The addition of modeling tools, component generation tools, and Web options only adds to its value. Those evaluating this version of PowerBuilder will find tools with plenty of merit.

Senior Analyst Maggie Biggs (maggie_biggs@infoworld.com) specializes in application

Integrating the pieces

PowerBuilder Enterprise 6.5 includes the following features.

PowerBuilder
4GL application development environment
AppModeler
For physical data modeling
PowerSite
Web development environment
PowerDynamo
Web application server
Jaguar Component Transaction Server
Transaction server
Additional components
Reporting, version control, etc.

development and database products at the InfoWorld Test Center.

PowerJ

Continued from page 83

PowerJ.

In addition to integration with Enterprise Application Studio, the next version of PowerJ is expected to offer some other interesting new features. These include XML support, an Enterprise JavaBean wizard, new deployment tools, and remote debugging enhancements.

I found this version of PowerJ to be solidly put together. The addition of beefed-up JDK support is good to see. I was able to put together my test applications to tar-

get various JDK versions without incident.

The added JFC support was well integrated into the PowerJ environment. It was easy to add Swing components to my test applications from the palette.

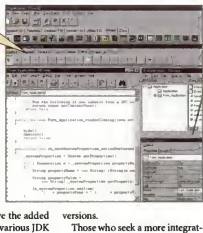
I also worked with some of the other components in PowerJ. These included AppModeler, PowerSite, PowerDynamo, and JaguarCTS.

These components support physical data modeling, Web site management, application generation, visual HTML editing, transaction management and more. With the exception of a few minor bugs in JaguarCTS, the components worked well and I see good value in inte-

grating them in the forthcoming Enterprise Application Studio.

Good bet for pros

This interim release of PowerJ is a good bet for both experienced developers and those who wish to have the added flexibility of targeting various JDK



The Classes window enables faster navigation through source code (see code window), while the object inspector supports the modification of properties and events.

ed development solution and less-experienced Java developers should consider this PowerJ version with an eye toward the expected PowerJ update and concurrent Enterprise Application Studio release that are expected in the fourth quarter of this year.

Senior Analyst Maggie Biggs can be reached at maggie_biggs@infoworld.com.

ON THE EDGE · JEFF SYMOENS

Linux still has a way to go before it's a viable contender for the corporate desktop

TALKING ABOUT LINUX is becoming a national pastime among us geeks. But even better than talking is writing about Linux—because at least when you write about the OS, it becomes much more difficult to get wrapped up in an argument over pronunciation. By the time we can agree on how to say it, we might learn how to use it. But if Linux is going to invade the desktop, a few other things have got to happen as well.

Linux is the ultimate successor to the desktop throne, as any Linux fan would have you know. After my Aug. 10 column (see "Microsoft's treatment of Windows NT 5.0 platforms company ahead of customers' needs," page 109) you can bet I received quite a few e-mail

messages from readers saying that they weren't concerned with Windows NT; they are more interested in Linux. Many readers cited the stability and scalability of Linux as major attractions.

There were also a few letters from others citing NetWare and even AS/400 as alternatives to Windows NT. However, it seems appropriate for me to reiterate that my column was about the desktop. And although I do not see NetWare and OS/400 moving to the desktop anytime soon, I do think that Linux has opportunities there.

Many of us at the InfoWorld Test Center agree that Linux is a strong platform. We gave a Product of the Year award to the Red Hat Linux distribution in each of the last two years. I also have a couple of Linux boxes running in the Test Center. But I have chiefly used the OS as a server platform.

I haven't yet found the OS as useful on the desktop, but I do see progress. For example, the latest release of Red Hat Linux (Version 5.1) continues to get easier to install and configure. But it has to be even easier if more people are going to use it. Linux has to get

easier especially in adding a modem and connecting to your ISP if more folks are going to adopt the OS at home and on the road.

To help jump-start widespread adoption of Linux, the Canadian Linux Users' Exchange (CLUE) is hosting a nationwide "Installfest" in which CLUE members will be on hand, in various Canadian cities, to help users install and configure Linux. This shows that Linux is growing in popularity, but it is also an admission that the OS needs improvement. (You can get more information on CLUE at <http://global.proximity.on.ca/clue/>.)

Linux is also gaining in its support for hardware. I now see fewer problems from the lack of third-party driver support, for example, but my troubles are not yet gone. Hardware support needs to continue to grow to the point where even Compaq computers can run Linux without finicky behavior.

Most important though, we are starting to see a handful of new desktop applications emerge from reputable vendors, such as Corel's WordPerfect for Linux. But we have to see more. If Linux is going to get the corporate desktop it will be the applications that

take it there.

There is already widespread agreement that Linux is a strong operating system, because it is very stable and reliable. But most people don't care who builds the better OS mousetrap. They want to know who makes the best application cheese. Because, after all, it's the cheese that gets the mouse to the trap.

Microsoft certainly understands this. How else could it continue to dominate the OS market with so many disgruntled users? Because even greater than the company's OS monopoly is its monopoly on applications that are written specifically for Windows. That is what keeps people coming back.

Linux has come a long way and there is a community of people to thank for that. Maybe if we can agree on how to pronounce Linux, we can get more developers to write first-class applications.

Are you considering Linux in your corporate desktop strategy? Send me a e-mail and let me know.

Senior Analyst Jeff Symoens lives on the edge at the InfoWorld Test Center, covering enterprise platform products. He can be reached at jeff_symoens@infoworld.com.

FROM THE ETHER · BOB METCALFE

The computer industry's agenda for 1999: Y2K is out, I-commerce is in

YOU SIT under an umbrella with a cool drink. Your bare feet play in the warm sand.

You read this column in *InfoWorld* before diving back into the pages of that huge new Clancy novel. Your e-mail later today will smell of coconuts.

That's what I imagine, feeling sorry for myself stuck here in my office working on the computer industry's agenda for 1999.

I think of writing to you with a solution to our coffee and tea puzzle. (See "If unwanted e-mail is in the eye of the beholder then I want a spam button," *Aug. 3, page 95*.) And I've been sent a new puzzle about three light switches, which seem at first like Monty Hall's doors. ("Microsoft, government got you down? Try these mind puzzles for a lift," June 8, page 123.) Maybe next week.

This week, however, I'm after your ideas for Agenda, the 12-year-old computer industry conference I'm again pulling together for Oct. 17 to Oct. 20 in Scottsdale, Ariz. (See <http://www.agendaweb.com>.)

No, I'm not trying to get you to attend Agenda. Agenda is not for *InfoWorld* readers, who mostly buy information technology. Agenda is by invitation only for computer industry executives, who mostly sell information technology.

Agenda speakers are not touted. Agenda is expensive. And in a few days, it will be full. So please hurry, send me your comments on this draft Agenda agenda.

Something not to be discussed at Agenda is the year-2000 problem. Now that Clinton is proposing a year-2000 law to protect computer companies from lawyers (ha) you might well consider the problem handled.

Fear mongering about the year 2000 is akin to predicting collapses of the Internet. So let's stock our bunkers with extra food and ammunition and plan to spend 1999 counting down, but, please, let's not discuss the year 2000 at Agenda.

Another round of Moore's Law, another few Windows releases, and some bigger, faster Internet routers are the technological underpinnings of our 1999 agenda. But much of the new stuff will come from startups, and some of the most promising will be schmoozing at Agenda.

Our big and expensive enterprise applications, whose suppliers may soon have to stop taking us for saps, will evolve on top of the various new technologies. The Internetification of the enterprise is on the agenda.

Keeping the computer industry alive with competition is on the agenda for 1999. This is not to say that our Federal Trade Commission and Department of Justice will be

anywhere near finished next year coaching Cisco, Compaq, IBM, Intel, Microsoft, Oracle, and others on how to avoid abuse of monopoly powers.

Breaking the Internet's bandwidth bottlenecks will continue in 1999. If you think certain computer companies are deadly monopolies, then look again at our fever, bigger, and less regulated telephone monopolies. Two government agencies figure heavily here, the Federal Communications Commission and the

Department of Justice.

It sometimes seems they came and went in 1998, but network companies are still on the agenda. So-called NCs may be dead, but PCs are still passé, and during 1999 we'll have to come up with a new name for the inevitable next platform paradigm.

The continued commercialization of the computer industry may be the agenda item for 1999. Prices are dropping. PC penetration of U.S. households has just passed 40 percent. Bill Gates says 60 percent by 2001. The Internet has become the top reason for buying home computers. Home LANs are proliferating. About the only thing standing in the way of Gates' prediction is, well, Windows. Fortunately there are Palm licks and many other non-PCs.

And now that Internet companies — including Wintel — are proliferating in such numbers, they are serious new media. Publishing, broadcasting, advertising, and journalism are in for a rough ride in 1999 as their communities opt ever more often

for portals into the Internet.

Maybe Internet commerce is the agenda item for 1999. Amazon.com remains the poster child, but now it has competition, lots of it, and FedEx is a regular at our house. Internet economics will continue to evolve rapidly away from the development phase. Not much micromoney will flow during 1999, but a lot of megamoney will.

And then, as a final agenda item, there is education. The computer industry needs education fixed so it won't run out of employees and customers. The computer industry also has much to offer in the way of solutions, both in its products and in its way of competing for customers.

So, what are we missing in the way of 1999 agenda items for the computer industry?

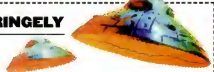
Internet pundit Bob Metcalfe invented Ethernet and founded 3Com in 1979.

Send e-mail to metcalfe@idg.net or see <http://www.idg.net/metcalfe>.



NOTES FROM THE FIELD BY ROBERT X. CRINGELY

Bobby wishes life was more like Star Trek ... and takes aim at his evil twin



AS FAR AS I can see, the only benefit of watching sci-fi shows such as Star Trek is to see where technology would be if practical considerations — such as what is physically possible — weren't holding it back.

Like the Starship Enterprise's capability to let any console be used for any task, a location-independent capability that I'm sure is built on some far-off descendant of Java.

San Francisco bound

We're a long way from that stage though, but if you ask me, it would be a lot closer if vendors would only use a bit more common sense.

It's a little more than ironic, for example, that IBM's premier Enterprise JavaBeans effort, called Project San Francisco, is actually written mostly in Inprise's (formerly Borland) Builder tools for Java, especially given IBM's efforts to position its

VisualAge toolset as a Java environment. I guess somebody at IBM doesn't want to eat their own dog food.

In general, IBM's Web efforts are a bit of a mess with no less than four separate groups trying to drive the effort. In addition to the San Francisco project, there are separate Websphere efforts sanctioned by IBM, and two subsidiaries — Lotus and NetObjects — that have their own Web strategies in place. Seems like it might be time for Lou Gerstner to call a little summit meeting to keep these groups from constantly re-inventing each other's wheel.

How Compaq should get direct

That said, it's easy to look around the industry and point at what companies should be doing, but it's harder to get them to take notice.

If anyone from Compaq is reading this, for example, I'd like to suggest that the company considers buying Micron Electronics: It's common knowledge that Compaq wants to create a direct sales strategy, but is afraid of alienating its resellers. A Micron acquisition, however, would give it a direct sales subsidiary that could be kept separate from its own channel efforts. And to cap it off, both companies love Windows NT.

Of course, Compaq is still suffering from Digital indigestion, so it might have to wait for a bit, but the risk that it is running is that Micron will be worth a lot more money later on, because it has turned the corner on expenses.

BEA hop

BEA Systems is another vendor that could be on the hunt for acquisitions. The company's CEO Bill Coleman is making no secret that the company has \$250 million in the bank, and may target an application server vendor.

However, Coleman denied one rumor I've heard that seems to make sense — that BEA is planning to buy Symantec in order to marry its tools to the BEA TP application server environment. BEA would then sell the nontools parts of Symantec to Network Associates in order to help fund the acquisition.

If all these guys took my advice, I'm sure we'd be a lot closer to a Star Trek level of technology.

I feel like I've already done my bit: You see, the episode where a transporter accident causes two versions of Commander Riker to materialize is actually based on an incident from my own life. For the last few years I've been battling the evil twin that resulted from the accident. And yes, I really hate flying.

Materialize me at a tip. Call me at (650) 312-0555, fax me at (650) 286-2775, or e-mail me at cringely@infoworld.com.



DOWN TO THE WIRE • NICHOLAS PETRELEY

This happy Linux camper is crying a river over all the political infighting

I'M A VERY HAPPY camper. Between the K Desktop Environment, or KDE (<http://www.kde.org>), WordPerfect for Linux (download a trial version of WordPerfect 7 for Linux at [ftp://ftp.digitalriver.com/correlinux/kuip.tar.gz](http://ftp.digitalriver.com/correlinux/kuip.tar.gz)), and Netscape Communicator for Linux (<http://home.netscape.com>), I've got everything I need to be completely Windows-free on the desktop. I've been using Red Hat Linux (<http://www.redhat.com>) on my server for years, but until now, I've spent half my time in Windows at the desktop and half my time with Linux.

It didn't take this long to make the switch because there weren't enough applications for Linux. Star Division's StarOffice 4.0 and Red Hat Appliware 4.3 are both marvelous office suites. I simply enjoyed applications such as WordPerfect 8 enough to spend time in Windows. But the last straw was when I got my mitts on the release candidate for WordPerfect 8 Linux after Windows NT crashed for the third time in one day. Apart from games and voice dictation sessions, I have few reasons left

to boot Windows. I'm millimeters away from making blue screens nothing but a distant memory.

So far WordPerfect 8 for Linux is nearly a perfect duplicate of the Win32 version. It reads and writes the documents I created in Windows perfectly. And despite Microsoft's recent trumpeting that Office 2000 will usher in the age of the two-way Web, I've been using WordPerfect (and other word processors) to publish documents to Web servers for a long time.

The shipping version of KDE also makes it easy to spend most of my time in Linux. KDE combines the best features of Active Desktop without the performance, compatibility, and instability problems of Windows 98. It definitely takes a Linux user to install it, but then KDE is ready for the average desktop surfer.



there are few reasons left to boot Windows.

I'm thrilled with the redesign and new features of the Netscape Communicator 4.5 beta release, but I may go back to the more stable Version 4.05 because the beta version crashes far too frequently.

Finally, I have to credit Xi Graphics (<http://www.xig.com>) for providing an important piece of the puzzle. I shelled out a pricey \$100 for its graphics drivers for Linux, but it was worth it. Xi Graphics' Accelerated X 4.1 provides excellent Linux and FreeBSD graphics support for what I consider the two hottest combination 2-D/3-D Accelerated Graphics Port cards on the planet, the Matrox Millennium G200 and the Matrox Mystique G200.

You've come a long way

All these factors make Linux very close to giving Windows a run for its money as a desktop OS. But the whole open-source movement has a few remaining problems.

Unfortunately, the problems are almost entirely political rather than technical. And I'm talking about open-

source politics, not departmental IT politics. There is so much infighting in the open-source community that I often wonder how anything ever gets done.

Leaders in the open-source community fight bitterly over trademark rights and who represents their interests. Richard Stallman,

founder of the Free Software Foundation and the GNU Project, is miffed that the Linux kernel gets undue credit for the surrounding framework of GNU software that makes Linux useful. FreeBSD fans often resent the popularity of Linux and some consider Richard Stallman the Antichrist because he believes in making open-source software mandatory.

Then you have the various Linux factions that defend their distribution. Depending on whom you talk to, Red Hat, Caldera, Slackware, Debian, SuSE, or "Your-Distribution-Here" always rules and the rest suck. The animosity even gets down to the application level. Fans of KDE take cheap shots at GNU Network Object Model Environment (a competing graphical desktop work-in-progress) and vice versa.

Some of these people have good points, and some of the issues they are passionate about are indeed important. But with all the giant strides that Linux and open-source software have seen in recent weeks, it would be a pity if any open-source software experienced stunted growth because people with special interests insist on ignoring or fighting about the big picture.

Personally, I think open-source software needs a grown-up to step in and lead it without all this petty bickering. What do you think would be the trick?

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BETWEEN THE LINES • MARK TEBBE

The road to application development nirvana may be rockier than you realize

WHEN THE WEB was emerging as an enterprise development environment, there were promises from many vendors that the problems from the client/server era would finally be solved. Each was quick to explain its road to application development nirvana.

However, given the broken promises on both data releases and feature offerings, corporate IT development staffs will actually have a tougher route, not an easier one. As a result, many are finally turning to object-oriented approaches as a means of coping with this climate of uncertainty.

It started out so simply. By following a specific vendor or technology road, you were promised clear access to the land of easy and successful applications. Of the many roads, the best paved and most traveled was the Microsoft one. Bill Gates even wrote *The Road Ahead* to show the way.

Microsoft maintained that by adhering to

its Component Object Model strategy and using its products, tools, and architectures, application developers would have an easier future. According to Microsoft, by late 1997, we would be connecting our enterprise with Windows NT 5.0 and its integrated Active Directory.

Given the clarity of this message, Microsoft appeared to be the safe choice. But the reality is very different. NT 5.0 is hopelessly late and the promised tools haven't yet materialized—although both will begin their major rollouts at Microsoft's DevDays next week.

Microsoft might have more reason to worry if rival Sun weren't missing milestones of its own. At first Sun seemed to offer an ap-

pealing alternative route. Having a universal language that could run equally on many platforms sounded great. And since the growing image of Microsoft conjured up fears of the 1970's IBM-dominated world, corporations looked to Enterprise Java as a way of keeping their options open.

But the road ahead looks like a rough one for Java as well. The reality is that Sun isn't capable of getting a timely software product out of the door. While IBM has taken a very strong hand in getting this corrected, Java Development Kit 1.2 still languishes in the soon-to-be-released phase. And when you factor in the Java industry's inconsistencies and constant infighting, it's no wonder that most corporations aren't yet willing to bet their enterprise future entirely on Java.

The fact is, no one vendor has earned the right to lead corporations to app dev nirvana. Many corporations are keeping their options open by pursuing an object-oriented path. As it happens, this safest route is also one of the oldest and least traveled. It has his-

torically been left to geeks who are carryovers from the land of Smalltalk methods and Lisp parentheses. But things have changed.

By integrating object-oriented techniques with appropriate products and harnessing

the power of application component architecture, developers can build world-class solutions that leverage the best from various vendors. As a result, they will no longer be locked themselves into a vendor's promised schedule or feature set.

Make no mistake: This road is hard and requires the best of developers. It also requires application development architects. But the payoff in flexibility is significant.

Architects could create a corporate framework that ensures success in today's confusing industry marketplace. Properly done, the resulting architecture could leverage NetWare's Novell Directory Services while, for example, providing a solid platform for server-side Java applications. It could allow browser-based applications to be integrated with richer client applications. It could also put corporations in a strong position to leverage numerous application server platforms that are coming down the pike.

As such, the road to app dev nirvana is paved with an open-minded approach and solid object-oriented techniques.

Do you feel comfortable with your app dev strategy? Are you applying object-oriented approaches in your plans? Send me your insights via e-mail.

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